PFE ORIGINAL

Weston Solutions, Inc.
1400 Weston Way
West Chester, PA 19380
610-701-3000 ● Fax 610-701-3186
www.westonsolutions.com
The Trusted Integrator for Sustainable Solutions

3 March 2011

U.S. Environmental Protection Agency
Region 3
Attn: Greg Ham, 3HS31
701 Mapes Road
Fort Meade, MD 20755-5350

Subject: **Final Work Plan – Removal Site Evaluation for New Jersey Fireworks**
Technical Direction Document No.: WS01-10-08-004

Dear Mr. Ham:

Weston Solutions, Inc. (WESTON) is pleased to submit three (3) copies and one (1) CD of the Final Work Plan – Removal Site Evaluation for New Jersey Fireworks.

If you have any questions regarding this report, please contact me at [redacted]"non responsive based on revised scope"

Very truly yours,

WESTON SOLUTIONS, INC.

[redacted]"non responsive based on revised scope"

START Project Team Leader

Enclosures

FINAL
WORK PLAN

ENVIRONMENTAL PROTECTION AGENCY
SUPERFUND TECHNICAL ASSESSMENT RESPONSE TEAM
REMOVAL SITE EVALUATION
NEW JERSEY FIREWORKS
ELKTON, MARYLAND

TDD NO.: WS-01-10-08-004

Prepared For:

U.S. ENVIRONMENTAL PROTECTION AGENCY REGION 3
1650 ARCH STREET
PHILADELPHIA, PENNSLYVANIA 19103

Prepared By:

WESTON SOLUTIONS, INC.
1400 Weston Way
West Chester, Pa 19380

WESTON PROJECT NO.: 20403.012.001.0019.00

FEBRUARY 2010

FINAL
WORK PLAN

ENVIRONMENTAL PROTECTION AGENCY
SUPERFUND TECHNICAL ASSESSMENT RESPONSE TEAM
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CONTRACT NO.: WS-01-10-08-004

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WESTON – Field Team Leader

3/3/11
Date

"non responsive based on revised scope"

WESTON – Program Manager

3/3/11
Date

TABLE OF CONTENTS

Section **Page**

TABLE OF CONTENTS
CONTINUED

Section **Page**

LIST OF TABLES

LIST OF APPENDICES

LIST OF ACRONYMS

ATF	Bureau of Alcohol, Tobacco and Firearms
BIP	blow-in-place
CERCLA Act	Comprehensive Environmental Response, Compensation, and Liability
CFR	Code of Federal Regulations
dB	decibel
DDESB	Department of Defense Explosives Safety Board
DID	Data Item Description
DoD	Department of Defense
DoDI	Department of Defense Instruction
DOT	U.S. Department of Transportation
DQCR	Daily Quality Control Report
EM	Engineering Manual
EOD	Explosive Ordnance Disposal
EPA	U.S. Environmental Protection Agency
EPP	Environmental Protection Plan
ESP	Explosives Site Plan
EOTI	Explosive Ordnance Technologies, Inc.
GPS	Global Positioning System
HASP	Health and Safety Plan
HE	high explosive
HTW	hazardous or toxic waste
ID	identification
m	meter
MEC	munitions of explosive concern
MD	munitions debris
MPPEH	material potentially presenting an explosive hazard
MSDS	Material Safety Data Sheet
NAD	North American Datum
NJF	New Jersey Fireworks

LIST OF ACRONYMS CONTINUED

OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
PM	Project Manager
PPE	personal protective equipment
QC	quality control
RSE	Removal Site Evaluation
SOP	standard operating procedure
SO/QCS	Safety Officer / Quality Control Specialist
SUXOS	Senior UXO Specialist
TDD	Technical Direction Document
U.S.	United States
USACE	U.S. Army Corps of Engineers
USGS	U.S. Geological Survey
UTM	Universal Transverse Mercator
UXO	unexploded ordnance
UXOSO	UXO Safety Officer
WESTON®	Weston Solutions, Inc.
WP	Work Plan
WWII	World War II

1. INTRODUCTION

1.1 GENERAL

Weston Solutions, Inc. (WESTON®) is performing a Removal Site Evaluation (RSE) at the Former New Jersey Fireworks site (NJF) under Superfund Technical Assessment Response Team (START) contract No. EP-S3-10-05. Work is authorized under Technical Direction Document (TDD) WS-01-10-08-004 (included in **Appendix A**), and will be performed in accordance with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP).

This Work Plan (WP) describes the technical approach for the ordnance assessment to be conducted at Former NJF site. The site comprises 61.4 acres of land associated with former firework and pyrotechnic manufacturing, some of which were used for World War II (WWII) ordnance production.

1.2 PROJECT LOCATION

The Former NJF site is located at 1726 E. Old Philadelphia Road in Elkton, Cecil County, Maryland. The site located in just north of the Elk Neck State Forest and is situated in a rural setting. The site is comprised of eastern, central and western sections. The site is bordered to the north by Route 7, to the east by an unmanned tributary of Mill Creek and a trailer park, to the south by Amtrak Railroad and Mill Creek, and to the west by a septic cleaning company. The coordinates at the center of the site are approximately 39.6° N latitude and 75.87° W longitude. The site and surrounding areas are shown on Figure 1, Site Location Map, located in **Appendix B**.

1.3 NEW JERSEY FIREWORKS SITE DESCRIPTION

According to the Maryland Department of Assessment and Taxation, Cecil County, Real Property Data Search, the site contains three parcels:

- Map 32, Grid 4, Parcel P20 contains 26.3 acres. This encompasses the eastern portion of the site, which contains the office trailer, Burn Pit Area 1 (BP 1), Disposal Area 1 (DA 1),

Disposal Area 2 (DA 2), former Sparkler Building, Tracer Element Area (TEA), and several large and small sheds.

- Map 32, Grid 4, Parcel P165 contains 32.07 acres. This encompasses the central portion of the site, which contains Burn Pit Area 2 (BP 2) and several sheds and trailers.
- Map 32, Grid 4, Parcels P482 contains 3.02 acres. This is the western part of the site, which contain Route 7 Dump Area.

The site ranges from 25 feet to 75 feet above mean sea level (MSL) and gently slopes to the south towards Mill Creek. The western portion of the site consists of a former clay quarry filled with demolition and construction debris disposed of by the State Highway Administration during the early 1980s. Prior to disposal of highway construction materials, the quarry received wastes from ordnance/fireworks manufacturing facilities. The eastern portion of the site contains a widely space warehouse building, including the former Sparkler Building, which was destroyed in March of 2007. The central portion of the site is wooded. The roads on the site are unimproved and the easternmost portion of the site is fenced and access is restricted by a locked gate. The Route 7 Dump Area is also fenced. The Amtrak railroad and Mill Creek proved a natural barrier to the site along the southern border. Elk Neck State Forest is located south of the site on the southern side of the Amtrak Rail Line.

1.4 NEW JERSEY FIREWORKS SITE PROFILE

The former NJF site was used to manufacture fireworks and pyrotechnic products and appears to have been used to function-test products for quality control purposes. In addition to the items described above, it is believed that the area may have been used to test pyrotechnic products, including Document Destroyers containing Thermite. A nearby location is believed to have been used for un-permitted disposal of waste material.

In March 2006, a person operating a recreational metal detector reportedly discovered what was thought to be three grenade pins in an open and fallow area in the northeastern portion of the site. This allegation was never substantiated. Then on October 11, 2006, Munitions and Explosive of Concern (MEC) items were discovered onsite during the excavation of a septic field. Personnel

from the Maryland Fire Marshall's Office tentatively identified the MEC as unprimed antiaircraft tracer rounds. Approximately ten of the MEC were detonated in a remote portion of the site by Maryland Fire Marshall Office personnel.

In February 2007, Explosive Ordnance Technologies, Inc (EOTI) conducted a MEC "mag and dig" survey over a two acre area. A burn/disposal area encompassing approximately 0.5 acres and containing several fuses for 100-pound, sand-filled, black powder practice bombs was discovered. A burn/disposal area encompassing approximately 0.25 acres and containing several fuses, pins, and spoons was also discovered. During this time, a magazine (building 26) was discovered immediately west of the 0.25-acre burn/disposal area that had several bags marked "oxidizer" stacked up on the southern outside wall. Black powder was also observed in the three building between the 0.25-acre burn/disposal area and the Sparkler Building.

In December of 2007, Tetra Tech, the Region III START contractor at the time, subcontracted Enviroscan to perform a "mag and flag" survey in order to assess the extent of the MEC contamination on site. This survey focused on several areas of interest, including BP1, BP2, DA1, DA2 and TEA. Based on the results of that survey, Tetra Tech identified anomalies in several grids within each of the survey areas, with the exception of DA1 due to excessive surficial metallic debris. The locations of the anomalies were identified as areas of excavation and can be found in Appendix C, Areas of Excavation. WESTON will investigate the "areas of excavation" shown in Appendix C.

2. PROJECT ORGANIZATION

WESTON has developed a project team with the technical and administrative abilities required to safely and efficiently complete the RSE at the Former NJF site. WESTON will staff positions from our West Chester, Pennsylvania office for investigation activities. Subcontractors will provide support to the project on an as-needed-basis.

2.1.1 Project Staff - Weston Solutions, Inc.

2.1.1.1.1 Field Team Leader

non responsive based on revised sc [redacted], the START Field Team Leader (FTL), will be responsible for reviewing data, monitoring technical performance of field teams, review of the results of excavations, and coordinating with the field teams in the development of field reports.

2.1.1.2 UXO Personnel

2.1.1.2.1 Senior UXO Supervisor

non responsive based on revised sco [redacted], the Senior UXO Supervisor (SUXOS), is the senior subject matter expert in the field during the execution of this RSE. The SUXOS responsibilities include:

- Planning, coordinating, and supervising all on-site MEC-related activities.
- Implementing procedures and guidance for MEC operations directives and federal, state, and local statutes and codes.
- Certifying material potentially presenting an explosive hazard (MPPEH) and/or range scrap as ready for turn-in or disposal.
- Maintaining administrative records of the project.
- Supervising multiple project teams that are performing MEC and MEC-related activities, such as:
  - UXO escort for vegetation clearance, land surveying, and anomaly avoidance.
  - Instrument-aided visual surveys.
  - Demolition activities.
  - Transporting and storing explosive material.

The SUXOS will report directly to the WESTON FTL and will have an open line of communication with the UXO Safety Officer/Quality Control Specialist (SO/QCS).

2.1.1.3 UXO Safety/Site Safety Officer/Quality Control Specialist

[non responsive based on revised scope] the UXO Safety Officer/Quality Control Specialist (SO/QCS), is responsible for monitoring all site activities for compliance with plans, procedures, and regulations relative to the health and safety of all employees, project members, land users, residents, and visitors. The SO/QCS is additionally responsible for:

- Monitoring all MEC investigation, removal, and demolition activities for compliance with health and safety requirements as established in plans and procedures.
- Understanding WESTON's and the project's requirements, and the plans and procedures to be implemented.
- The SO/QCS reports to the WESTON FTL for project-specific direction and will have a direct line of communication with the Program H&S Manager for administrative and technical direction on health and safety matters, and open communication with the SUXOS and SO/QCS.

2.1.1.4 WESTON UXO Personnel

UXO technicians will be required to perform mag and dig operations and reacquisition, removal, and disposal of detected anomalies. The technicians will be responsible for locating, investigating, identifying, removing, and disposing of all MEC, MPPEH, and munitions debris (MD) recovered. In addition, they will be responsible for documenting all required information. All UXO technicians will meet the qualifications of a UXO Technician I at a minimum and be under the direct supervision of a UXO Technician III. UXO technicians will meet the requirements of U.S. Department of Defense Explosives Safety Board (DDESB) Technical Paper 18 (TP-18), Minimum Qualifications for Unexploded Ordnance Technicians and Personnel (DoD, 2004).

2.1.1.4.1 UXO Technician III

The UXO Technician III will supervise the project team performing work on this project. The UXO Technician III may also serve in the capacity of Demolition Supervisor during demolition and explosive demilitarization operations. The UXO Technician III is responsible for:

- Supervising the team to which he/she is assigned.
- Providing the MEC subject matter expertise to ensure the team's safety and the project's quality.
- Ensuring the team's actions are accomplished safely and efficiently.
- Maintaining administrative records related to the team's operations.
- Implementing the work, safety, and quality plans for this project.
- Supervising the conduct of all on-site evaluations directly related to MEC operations.
- Being familiar with the duties of all assigned personnel and being able to perform all of the functions enumerated for UXO Technicians I and II.

If assigned as a Demolition Supervisor during demolition operations, the UXO Technician III is also responsible for:

- Training all personnel regarding the nature of the materials, hazards, and precautions.
- Coordinating with the SUXOS to ensure all notifications are completed prior to demolition.
- Being present and in direct control during all on-site disposal operations.

The UXO Technician III will report directly to the SUXOS and will have the experience qualifications documented in DDESB TP-18.

2.1.1.4.2 UXO Technicians I or II

The UXO Technician I or II is the primary MEC worker on the site. UXO Technicians I or II will report directly to the UXO Technician III and will have the experience qualifications documented in DDESB TP-18.

3. FIELD INVESTIGATION PLAN

3.1 OVERALL REMOVAL SITE EVALUATION APPROACH

The goal of the RSE is to intrusively investigate the "areas of excavation" shown in **Appendix C**. These "areas of excavation" will be surveyed using a "mag and dig" approach. All anomalies encountered will be excavated to a maximum depth of two feet using hand tools.

3.2 GEOPHYSICAL EQUIPMENT

The White's XLT All-Metals Detector consists of a hand-held, two-coil design that utilizes the electromagnetic method to detect ferrous and non-ferrous metals. An audible signal sounds when the sensors are swept over conductive material. The volume and frequency of the signal changes as the sensor pinpoints the center of the source body. The instrument sensitivity can be adjusted to increase or decrease the capability to detect small, metallic materials.

3.3 NAVIGATION AND POSITIONING EQUIPMENT

The Trimble Global Positioning Real-Time Kinematic Base Station and Rover(s) are capable of sub-meter accuracy and will be used mark the boundaries of the "areas of excavation" shown in **Appendix C**.

3.4 INTRUSIVE INVESTIGATION

3.4.1 General Methodology

Anomalies detected during the "mag and dig" surveys will be intrusively investigated using hand tools. All non-essential personnel will be evacuated from the area in accordance with the appropriate minimum separation distance as presented in Section 7, Explosives Site Plan (ESP).

The UXO Team will excavate each anomaly to determine/assess whether MEC or MPPEH are present. The depths of excavations will not exceed two feet. If the anomaly cannot be uncovered within the specified depth, the UXO Team will conspicuously mark the site with flagging material and continue.

If the subsurface contact is identified as non-MEC, it will be removed and the hole rechecked with a geophysical instrument. If no anomalous responses remain in the hole, the hole will be refilled and tamped. . If the subsurface contact is identified as MEC, it will be disposed of in accordance with the procedure detailed in Section 3.12, MEC Disposal.

The area around each identified anomaly will be checked to ensure that the anomaly was not masking additional anomalies and to ensure that all anomalies have been investigated. Each MEC item will have its condition and identification determined by UXO technicians.

All access/excavation/detonation holes will be backfilled with the soils excavated from the hole. Post-investigation restoration activities will be performed in accordance with Section 8, Environmental Protection Plan.

3.4.2 Storage of Munitions and Explosives of Concern

No MEC will be stored on-site during this project. All MEC recovered will be disposed of daily. If an item cannot be destroyed daily, it will be guarded until demolition can be conducted. No magazine will be sited for donor explosives. A local vendor will be utilized for explosive delivery on an as-needed basis.

3.5 MEC DISPOSAL

3.5.1 General Procedures

WESTON anticipates disposing of all MEC items on site, primarily through consolidation shots. MEC items that cannot be moved will be disposed of using blow-in-place (BIP) procedures. No item will be disposed of until it has been positively identified. If a scenario is encountered that prevents the destruction of a MEC item on site, or if a MEC item cannot be identified as a conventional explosive, or if the fuse cannot be identified by type or function, or if a suspect chemical warfare materiel is located, WESTON will notify the OSC, who will request EOD support. In conjunction with the EPA, Fire Marshall, and EOD, a determination will be made as to the proper course of action.

3.5.2 Demolition Activities

WESTON will conduct demolition activities on an as-needed basis and in accordance with the ESP provided in Section 7 of this WP. Demolition activities will follow the requirements of applicable Bureau of Alcohol, Tobacco and Firearms (ATF), and federal, state, and local regulations. The inspection/certification of MPPEH will be conducted in accordance with Department of Defense Instruction (DoDI) 4140.62 (DoD, 2008). Recovered MEC or MPPEH will be disposed of using consolidations shots or BIP procedures. If an item cannot be destroyed daily, it will be guarded until demolition can be conducted. WESTON will use remote-control detonation to ensure the safety of personnel. All demolition activities will be conducted according to the procedures and guidance detailed in the ESP and WP. WESTON will coordinate with the EPA and local authorities prior to demolition activities.

Detonations will be scheduled by the SUXOS on the basis of weather and logistical considerations. Detonations will occur only after all personnel have left the area (based on the safe fragmentation distance) and road guards/perimeter guards have been posted as instructed by the SUXOS (based on size, type, and quantity of MEC being disposed). To secure the perimeter, a safety zone will be established at the appropriate distance in one direction (north, south, east, or west) from the detonation area. UXO technicians will walk from the detonation area in the remaining three directions and will keep a line-of-sight between UXO technicians. In addition, trails and access points will have temporary signage alerting the public to demolition activities. During hook-up procedures, a designated project vehicle or equipment will remain in the area to provide emergency egress for the demolition team.

The SUXOS (or his designated assistant) shall make notifications of detonations. The composition of the demolition team will be determined by the SUXOS after consultation with the SO/QCS. Additional demolition teams may be used at the discretion of the SUXOS, if there are large quantities of MEC/MPPEH to detonate. Other non-demolition UXO personnel will provide perimeter safety.

Only the demolition team, SUXOS, and SO/QCS will be permitted in the area where demolition operations are being conducted. However, all of the above-authorized personnel should not be in the demolition operations area at the same time.

All demolition materials will be accounted for. Only the estimated amount needed to complete the day's demolition operations will be ordered from a local vender and transported to the work area daily.

Unique demolition sites will be photographed with a digital camera prior to and after firing of the shot, and the photograph(s) will be saved electronically for the RSE Report. At a minimum after each detonation, the detonation points and general demolition site will be inspected to ensure that a misfire, low order detonation, or kick-out has not occurred. The area where demolition operations are being conducted will remain secured until the SUXOS, in consultation with the SO/QCS, gives the "all clear."

3.5.3 Munitions Debris

During the execution of this project, MD may be recovered during investigations. All items deemed MD will be recovered. All recovered MD will be visually inspected for the presence of explosive or other hazardous material and secured in a locked container. The Demolition Supervisor and SUXOS will inspect all MD at intervals consistent with the volume accumulated. Additionally, the SO/QCS will inspect scrap material to verify the process and ensure that only inert items are contained in the scrap pile. A final inspection will be conducted immediately prior to the release to the designated disposal facility.

Certified MD will be transferred to a certified recycling center. All turn-in documents will be submitted with a Removal Report. Instructions for the completion of DD Form 1348-1 are contained in DoD 4145.26-M (DoD, 2008). The SUXOS will sign the Certificate as follows: *"This certifies and verifies that the material listed has been 100 percent inspected and to the best of our knowledge and belief, is inert and/or free of explosives or related materials."*

After the document is verified and signed by the SUXOS and SO/QCS, a copy will be maintained for the final report and a copy will accompany the range residue to its final disposition.

An on-site storage container will be used to containerize all MD. The storage container will be safeguarded under lock and key and will remain locked when not in use. All MD will be

disposed of at a recycling facility in accordance with all governing regulations. MD collected during the investigations will be inspected and disposed of at an off-site recycling facility.

3.6 INVESTIGATION-DERIVED WASTES

No investigation-derived wastes (IDW) are expected to be generated by the soil sampling procedures during the RSE. All PPE and disposable sampling equipment are considered non-hazardous. PPE and sampling equipment will be placed in a plastic bag and disposed in an appropriate refuse container. If IDW is generated, it will be properly containerized and characterized prior to disposal. For non-explosive soil, containerization would consist of plastic or steel drums or pails with secure covers. For liquids (i.e., water), containerization would consist of plastic drums or pails with secure covers. Characterization of the wastes will be as required by the receptor site.

4. REPORTING

4.1 RSE REPORT

RSE reports will be prepared at the conclusion of the field investigations. The RSE reports will summarize findings of all field investigations conducted as part of the MEC characterization. The reports will describe explosive hazards that may influence current and future use of the site.

5. QUALITY CONTROL PLAN

5.1.1 Daily Field Activity Records

All field activities affecting QC will be performed in accordance with documented procedures identified in the WP or applicable guidance. During all field activities, WESTON may use any or all of the following reporting forms and additional forms and reporting media as necessary:

- Daily Site Health and Safety Meeting Report
- Daily Quality Control Report (DQCR)
- Quality Assurance Audit Checklist and Audit Form
- Daily Equipment Checklist
- Health and Safety Compliance Inspection
- Site Visitors Logs

5.1.1.1 Daily Quality Control Reports

DQCRs shall be maintained in the project files for inclusion in the final report. The SO/QCS shall prepare a DQCR including, as a minimum, the following information:

- Preparer (name and signature).
- Date.
- The criteria for and results of any inspection, surveillance, or review performed (attach inspection or surveillance forms as applicable).
- The results of any review of submittals or other items.
- The results of QC inspections of "areas of excavation".
- Any significant issues or open items.

The SO/QCS will maintain a field logbook of all inspection and testing activities. This daily logbook will be used in preparing the recurring reports and deliverables and the project report.

5.1.1.2 Safety Log

Safety logs shall be maintained in the project files for inclusion in the final report. The SO/QCS shall prepare a log including, as a minimum, the following information:

- Preparer (name and signature).

- Date.
- Weather conditions, discussion of any incidents, accidents, or significant site events that may impact safety, and stopping work due to safety issues.
- Signatures of all project personnel and visitors acknowledging that they have participated in a safety briefing.

5.1.2 Receipt Inspection

Materials and items entering the site shall be reviewed for conformance with specification/purchase order requirements as required. Consumables, such as oil and office supplies shall receive a quantity inspection only. Any discrepancies shall be rectified with the vendor. An inspection report is not required. Equipment shall be inspected upon arriving on-site with the results of the inspections documented on the DQCR, team daily journals, or stand-alone inspection reports, as appropriate. Equipment shall be checked to ensure it meets the purchase order requirements and manufacturer's operating requirements.

5.1.3 Material Inspection

Materials brought on-site shall be inspected to ensure that they are consistent with purchase order/specification requirements, and this inspection shall be documented. In the case of materials of an engineered nature, the SO/QCS shall consult with the SUXOS to prepare an inspection plan and consult with a qualified inspector.

5.1.4 Equipment Inspection

Project personnel shall inspect equipment affecting quality (such as White's-XLT) on a daily basis for obvious defects. In addition, the SO/QCS shall perform random inspections of equipment to ensure that that equipment is in proper working order and working consistent with established requirements. These inspections shall be documented on the DQCR.

5.1.5 Explosives Inspection

Upon arrival at the site, all demolition explosives shall be inspected to ensure that they are consistent with the attached paperwork and bill of lading, as well as the purchase order. The results of the inspection shall be documented on the DQCR and on Magazine Data Cards.

6. EXPLOSIVES MANAGEMENT PLAN

6.1 GENERAL

This EMP outlines the procedures to be used by UXO personnel to acquire, receipt, store, transport, issue, and report the loss of explosives utilized during the RSE. All personnel involved with explosives will comply with all federal, state, and local laws as required.

6.2 LICENSES /PERMITS

WESTON has a Type 33-User of High Explosives Permit from the Department of the Treasury – ATF and will secure a Maryland permit to use explosives as required by local regulations. A copy of all licenses and permits will be maintained on site and available to any local, state, or federal authority.

6.3 ACQUISITION

WESTON will purchase explosives on an as-needed-basis from a licensed commercial vendor. Vendor information will be provided as required. Prior to bringing the explosives on site to the Former NJF site, the SUXOS will coordinate with the EPA OSC.

6.4 INITIAL RECEIPT OF EXPLOSIVES

For this field effort, a magazine will not be established on-site. Explosives that are delivered to the site will be placed in an approved Day Box mounted in the beds of a truck and used the same day. The following procedures will be adhered to upon initial receipt of explosive materials:

- Upon arrival at the site, the SUXOS will escort the vendor/supplier to a designated area for loading/unloading.
- An individual authorized to receive the explosives will compare the explosives delivery record to the actual quantity delivered prior to accepting custody for the explosives.
- Once the quantity has been confirmed, the explosive delivery record will be signed and the explosives transferred to and stored in the approved Day Box mounted on the trucks.
- All material introduced or removed from the Day Boxes will be entered on stack cards and explosive records will be updated.
- If it is determined that there is a discrepancy between the quantity delivered and quantity shipped, the following will occur:

- Notify the SO/QCS.
- Notify the OSC.
- Do not accept shipment.
- Contact the Shipper immediately to resolve the discrepancy.

Note: If the discrepancy cannot be resolved within 24 hours, notify the OSC, Local Law Enforcement Agency, ATF, WESTON MEC Service Line Manager, and WESTON PM.

All original receipts, shipping documents, or invoices will be retained on-site as part of records management. Copies of the documentation will be provided in the final report as an appendix.

6.5 TRANSPORTATION

The transportation of explosives to locations requiring demolition operations will be conducted in the following manner:

- Vehicles transporting explosives to locations requiring demolition operations will stay on roads, either improved or unimproved.
- Speeds will be kept to 20 miles per hour or less, depending on road conditions.
- Radio communications will be maintained with the SO/QCS.
- Vehicles will have a safety inspection performed prior to loading explosives.
- Vehicles will be equipped with a first aid kit and a minimum of two each 2A10BC fire extinguishers.
- Vehicles will be placarded during transport of explosives.

6.6 RECEIPT PROCEDURES

Prior to accepting any explosives, the procedures outlined above in the initial receipt procedures will be accomplished.

The WESTON SUXOS is authorized to purchase, receive, access, issue, transport, and use explosives for this project. Any other project personnel who will have access, issue,

transportation, and use authority for explosives on this project will be annotated on the approved user list, which will be maintained within the explosive management records.

Upon completion of each demolition operation, an ammunition consumption report will be completed. Upon expenditure of all explosives, the authorized person will certify in writing that the explosives were used for their intended purpose.

6.7 INVENTORY

A physical inventory of all explosives will be accomplished in accordance with ATF guidelines.

6.8 REPORTING LOST OR STOLEN EXPLOSIVES

Loss or theft of explosives will be reported as stated in 27 Code of Federal Regulations (CFR) on Commerce in Explosives. Upon the discovery of theft or loss of explosives, **Table 6-1** lists the individuals or organization to be notified.

Table 6-1 Reporting Lost or Stolen Explosives

TITLE	NAME	TELEPHONE NUMBER
WESTON SUXOS	"non responsive based on revised scope"	"non responsive based on revised scope"
WESTON UXO Safety Officer/Quality Control Specialist		
WESTON PM		
WESTON MEC QC Manager		
EPA OSC		
Local Authorities as directed	Department of Emergency Services	911
ATF		800-461-8841

6.9 RETURN TO STORAGE OF NONEXPLODED EXPLOSIVES

All explosives will be ordered on an as-needed-basis and consumed on the same day received.

6.10 DISPOSAL OF REMAINING EXPLOSIVES

All explosives ordered and received will be consumed on the same day received.

7. EXPLOSIVES SITE PLAN

An ESP has been prepared as a standalone document and is presented in **Appendix E**.

8. ENVIRONMENTAL PROTECTION PLAN

8.1 SITE DISTURBANCES MITIGATION PROCEDURES

8.1.1 Manifesting, Transportation, and Disposal of Wastes

All waste generated will be properly characterized and disposed of in accordance with all applicable regulations and through approved channels. It is expected that only uncontaminated trash will be generated as the result of this project. Generation of hazardous waste is not anticipated.

Although MEC are potentially hazardous, once detonated in place or at the designated demolition area, the only remaining material requiring disposal will be scrap metal. WESTON intends to arrange for recycling of all scrap metal. In accordance with 40 CFR 261.6(a)(3), scrap metal, if recycled, is not subject to parts 262-266, or 268, 270, or 124. WESTON will recycle all scrap metal generated as a result of necessary removal and maintain records of all recycling.

8.1.1.1 Nonhazardous Wastes

Nonhazardous solid waste materials, such as trash and general debris, will be removed from the project site and transported off-site for disposal through the municipal waste system.

8.1.1.2 Hazardous Wastes

WESTON does not anticipate generating contaminated wastes in the completion of this project and is not tasked to dispose of hazardous wastes under this contract. If WESTON generates a hazardous waste, the Program Health and Safety Manager will be notified, and only appropriately trained individuals will handle this type of waste. The procedures described in the following sections will be adhered to during the handling of wastes.

8.1.1.2.1 Packaging, Labeling, Storage, and Disposal

All hazardous waste will be stored in authorized containers and labeled in accordance with applicable regulations. Any waste generated by WESTON will be collected, stored, and labeled in accordance with applicable regulations.

8.1.1.2.2 Manifesting and Transportation of Wastes

WESTON does not anticipate that there will be any hazardous waste to be manifested or transported as there are no known chemical warfare materials on-site and the on-site detonation of MEC renders it nonhazardous. However, in the unlikely event that hazardous materials and wastes are encountered, they will be manifested and transported in accordance with applicable U.S. Department of Transportation (DOT) and EPA regulations.

8.1.1.2.3 Compliance with DOT Shipping Regulations

Transportation of all wastes and materials will be conducted in accordance with applicable DOT regulations, including labeling, use of placards, and documentation of transportation.

During the investigation, if WESTON encounters any signs of hazardous materials or waste, WESTON will make appropriate attempts to avoid those areas, if possible. WESTON will not compromise the integrity of the investigation, or the safety of its personnel. If hazardous materials are encountered, or are thought to be present, appropriate health and safety measures will be undertaken. WESTON personnel will notify the appropriate individuals of any encountered or suspected hazardous or toxic waste (HTW).

8.1.1 Security of Hazardous Materials

WESTON personnel will provide security to control the work area. All hazardous materials associated with the project (primarily explosives) will be secured as discussed in Subsection 6.4 of this Work Plan.

8.1.2 Burning Activities

Burning activities will be limited to the open detonation of MEC, where applicable. All detonations will be performed in conformance with the safety measures presented in the HASP.

Smoking will be restricted to designated areas or within closed automobiles. Smoking areas will be designated by the SO/QCS. In all cases, cigarettes butts and matches must be disposed of either in an automobile ashtray or in a metal butt can. Cigarette butts and matches may not be tossed from car windows or discarded onto the ground surface.

8.1.3 Dust and Emission Control

It is not anticipated that activities to be conducted during the project will have any significant effect on air quality as munitions demolition activities and normal vehicle use are considered minor mobile sources of air emissions. All vehicles and equipment will be in good working order and will meet applicable vehicle emissions requirements.

To aid in the minimization of particulates in demolition operations, WESTON will employ procedures such as tamping explosives with earth to reduce the particulates resulting from the explosion. Although the munitions detonation may result in a brief suspension of particulates, they will rapidly settle out of the air and the activity is not expected to adversely affect air quality.

8.1.4 Noise Control and Prevention

The Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit (PEL) for noise is 85 dB (29 CFR 1910.95). It is considered highly unlikely that this noise level would be reached.

It is expected that there will be two primary sources of noise on this project. The first is any mechanical equipment (i.e., trucks) that may be employed. WESTON will control the noise emissions from these items by ensuring that the manufacturer's noise control equipment (mufflers) are in place and functioning. Equipment will be turned off if not being utilized for the given task to minimize nuisance noise effect.

The second source of noise will be pulse noises resulting from demolition activities. Both tamping the demolition shot with earth and observing weather conditions on the day of the shot will control this noise. For example, a day with a low cloud ceiling will transmit the nuisance noise more effectively than a clear day. To reduce the nuisance noise on a cloudy day, various options will be assessed. They include possibilities such as not conducting the demolition shot, waiting for a shift in prevailing winds, reducing the net explosive weight of the shot, or some combination of controls. The SUXOS and SO/QCS will determine the applicable method of noise control.

8.1.5 Storage Areas and Temporary Facilities

Storage of materials will be in a designated on-site area approved by EPA. The storage area will be designated by EPA and coordinated with the property owner, if needed. Scrap metal will be containerized and stored in locked 55-gallon drums. Drums will be disposed of off-site at the conclusion of the project. WESTON does not anticipate the construction or use of a temporary storage area for hazardous materials. Unless directed by the OSC to do otherwise, all temporary facilities that were erected by WESTON to execute the TDD will be removed during demobilization.

8.1.6 Access Routes

WESTON will use any existing road/trail networks inside the facility, and county and private community roads outside the facility to gain access to and from the site. Site access with be through the main gate, which will remain locked from public access before and after work hours. No environmental impact is anticipated from the use of existing roads and trails since they are currently in use by personnel or from the use of county and private roads since they are used by the general public and private residents.

For safety purposes, the main ingress/egress route will be established through the main gate. This will allow for any emergency vehicle access for emergency situations, such as ambulances, the Fire Department or Police Department. Off-road creation of new access routes will not be required.

8.1.7 Vegetation Protection and Restoration

WESTON does not anticipate any need for vegetation to be removed since all anomalies to be investigated have already been accessed during previous geophysical surveys.

8.1.8 Site Water Run on and Runoff

Run on and runoff water controls are not necessary since there is no expectation that contaminated soils, water, or waste will be generated while conducting activities on-site. An Erosion and Sedimentation Control (E&SC) plan is not required because the total disturbed area is expected to be less than one acre.

8.1.9 Decontamination Procedures

All operations for the MEC portions of this project will be conducted in Level D personal protective equipment (PPE). No decontamination of personnel or equipment is anticipated to be performed.

8.2 POST-ACTIVITY SITE RESTORATION

This project will disturb the ground surface and may require site restoration; however, restoration will be limited to replacing and compacting the excavated fill material. If MEC are encountered that require BIP detonations, these holes will be backfilled with the same material that was excavated from the location and reseeded if necessary. No additional restoration activities will be conducted.

All wastes will be removed from the site immediately upon completion of each day's field activities. Therefore, no post–activity cleanup should be required. A post–activity inspection will be conducted by the SUXOS and the SO/QCS to ensure the location is left clean.

8.3 AIR MONITORING

Air monitoring will be conducted as necessary and as specified in the Site Health and Safety Plan.

9. REFERENCES

DoD (Department of Defense). 2004. Technical Paper (TP) 18, Minimum Qualifications for Unexploded Ordnance (UXO) Technicians and Personnel.

DoD (Department of Defense). 2008. Department of Defense Instruction 4140.62, Material Potentially Presenting an Explosive Hazard. November 25, 2008.

DoD (Department of Defense). 2009. 6055.09 STD, Ammunition and Explosive Safety Standards. August 2009.

Enviroscan, Inc. 2009. *Final Report – Subsurface UXO Detection Survey, New Jersey Fireworks Site, Elkton, Maryland.* Prepared for Tetra Tech, Inc, Boothwyn, Pennsylvania, September 2009.

EOTI. 2007. *Site Inspection For Munitions of Explosive Concern, New Jersey Fireworks Site, Elkton, Maryland.* Prepared for the Maryland Department of the Environment Waste Management Administration, ERRP, Baltimore, Maryland, March 2007.

EPA (U.S. Environmental Protection Agency). 2008. *Munitions and Explosives of Concern Hazard Assessment Methodology.* EPA 505B08001. Interim October 2008.

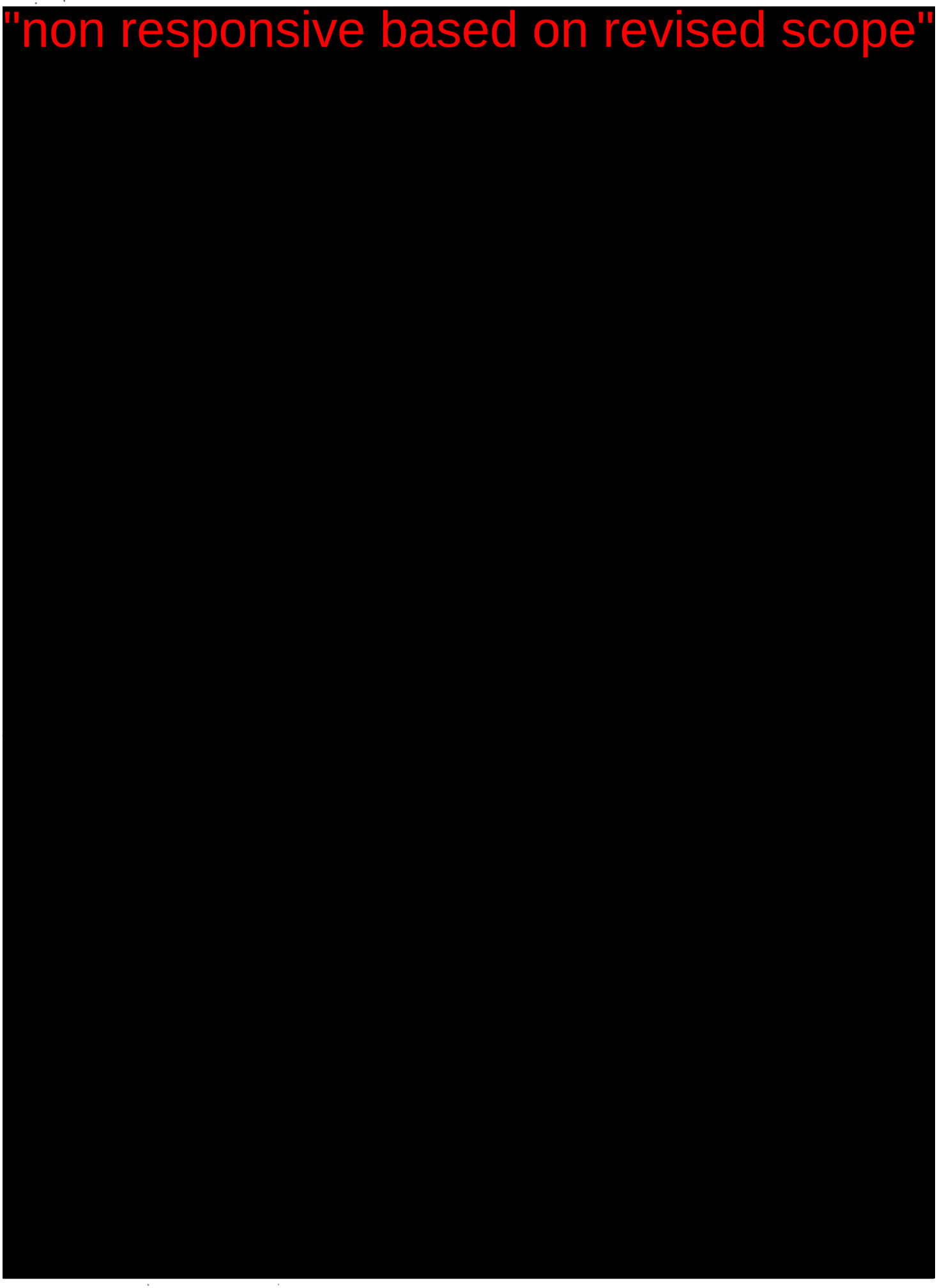
Tetra Tech, Inc. 2008. *Trip Report for the New Jersey Fireworks Site, Elkton, Maryland.* Prepared for the U.S. EPA Region 3, Philadelphia, Pennsylvania. June 2008.

Tetra Tech, Inc. 2010. *Synopsis of All Site Related Activity, Jan 2007 to June 2010, New Jersey Fireworks Site, Elkton, Maryland.* Prepared for the U.S. EPA Region 3, Philadelphia, Pennsylvania. June 2010.

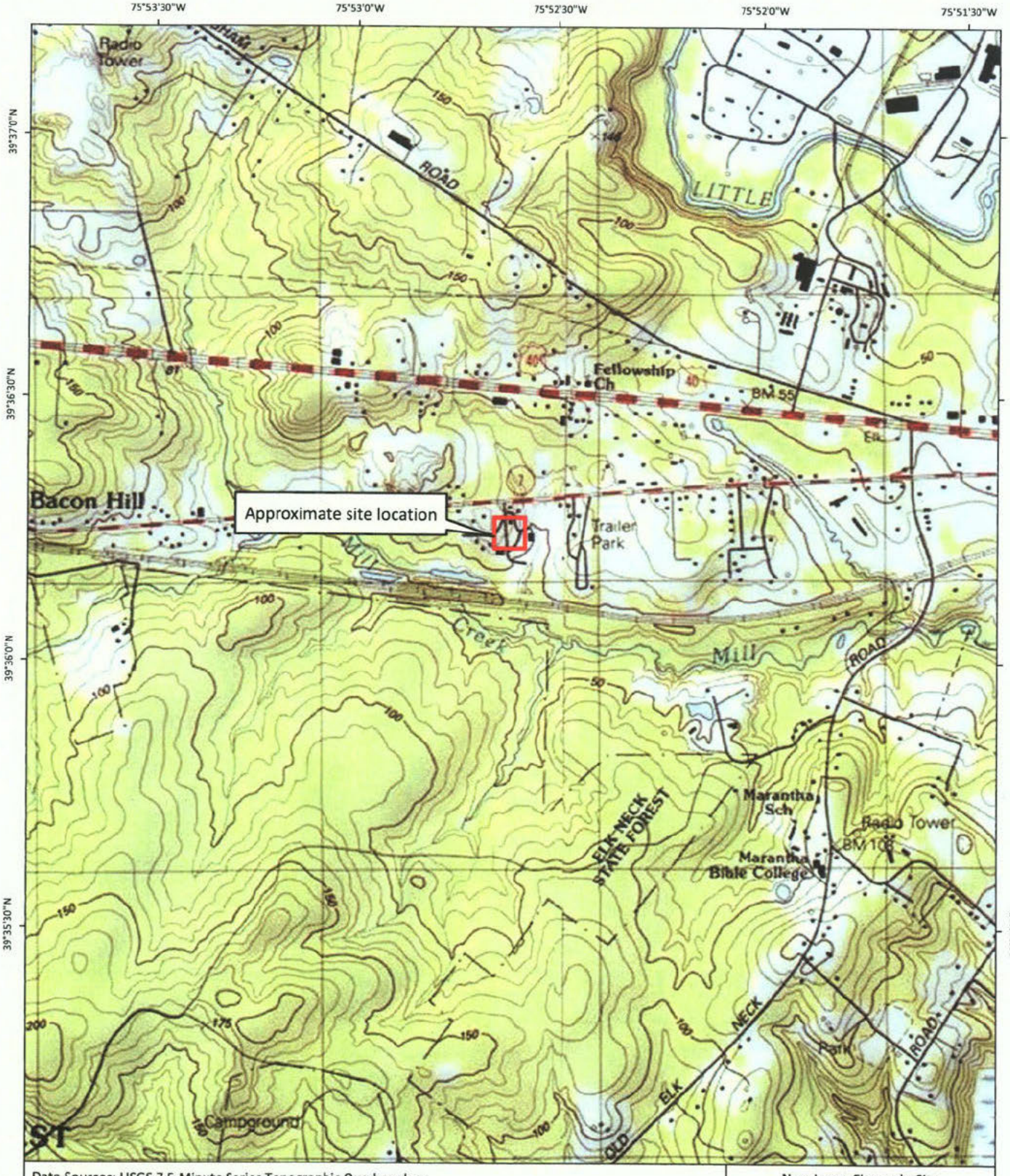
APPENDIX A
TECHNICAL DIRECTION DOCUMENT

"non responsive based on revised scope"

"non responsive based on revised scope"



APPENDIX B
SITE MAP



Data Sources: USGS 7.5-Minute Series Topographic Quadrangles:
Elkton, Maryland - Delaware, 1992; North East, Maryland, 1992

New Jersey Fireworks Site
Elkton, Cecil County, Maryland

Quadrangle Location =

Coordinate System:
WGS_1984_Web_Mercator_Auxiliary_Sphere
Projection: Mercator_Auxiliary_Sphere

GCS_WGS_1984
Datum: D_WGS_1984

N

0 1,250 2,500
Feet

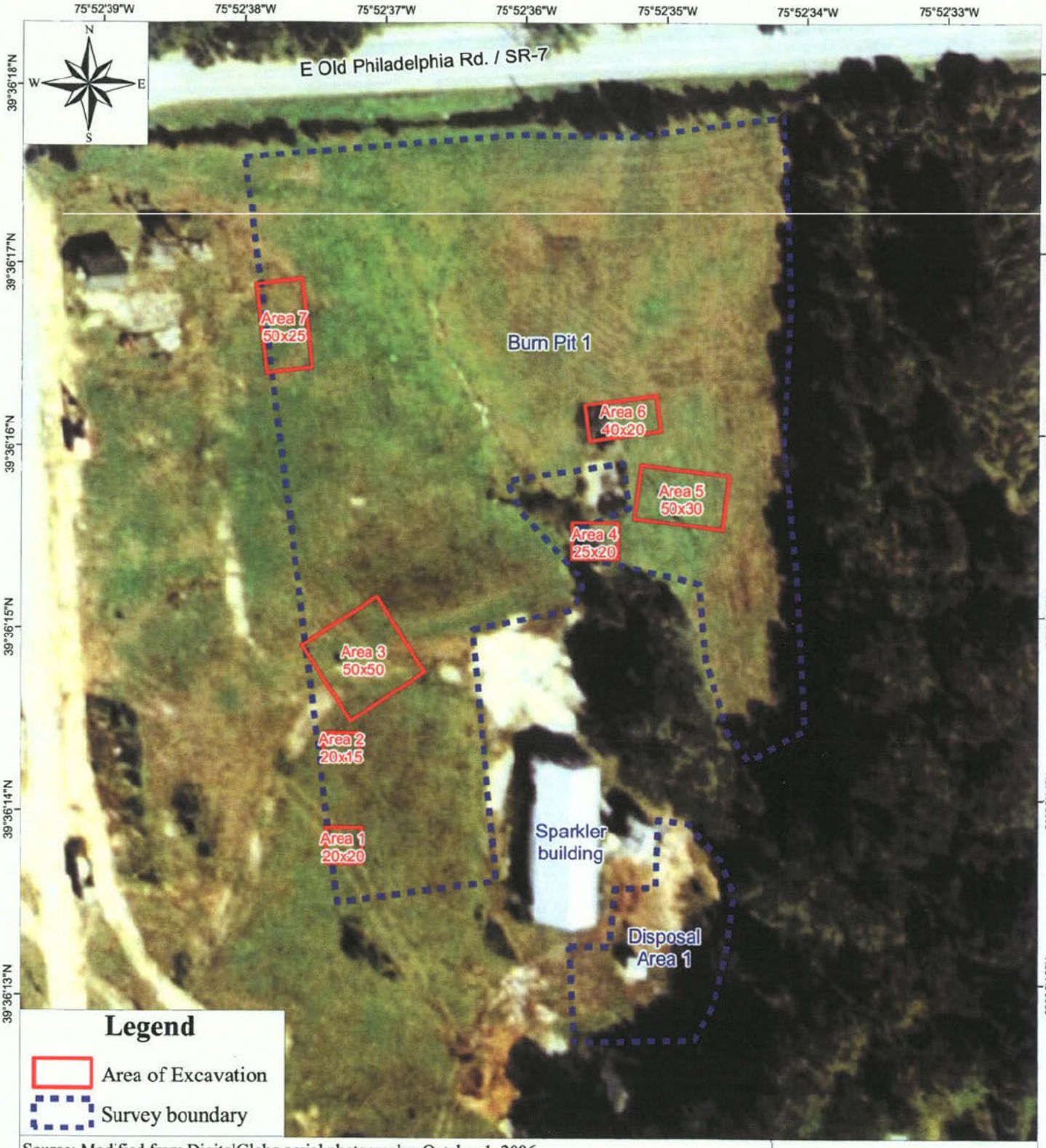
Figure 1
Site Location Map

TDD#: WS01-10-08-004
Contract: EP-S3-10-05

WESTON SOLUTIONS

File: \\Fsfed01\TIG\EPA_Region_III\NJ_Fireworks\MXD\Site_loc.mxd, 09-Feb-11 13:07, zieglera

APPENDIX C
AREA OF EXCAVATION MAP



Source: Modified from DigitalGlobe aerial photography, October 1, 2006.
Note: Areas of excavation are labeled with their dimensions (in feet).

0 50 100 Feet

Approximate Site Location =

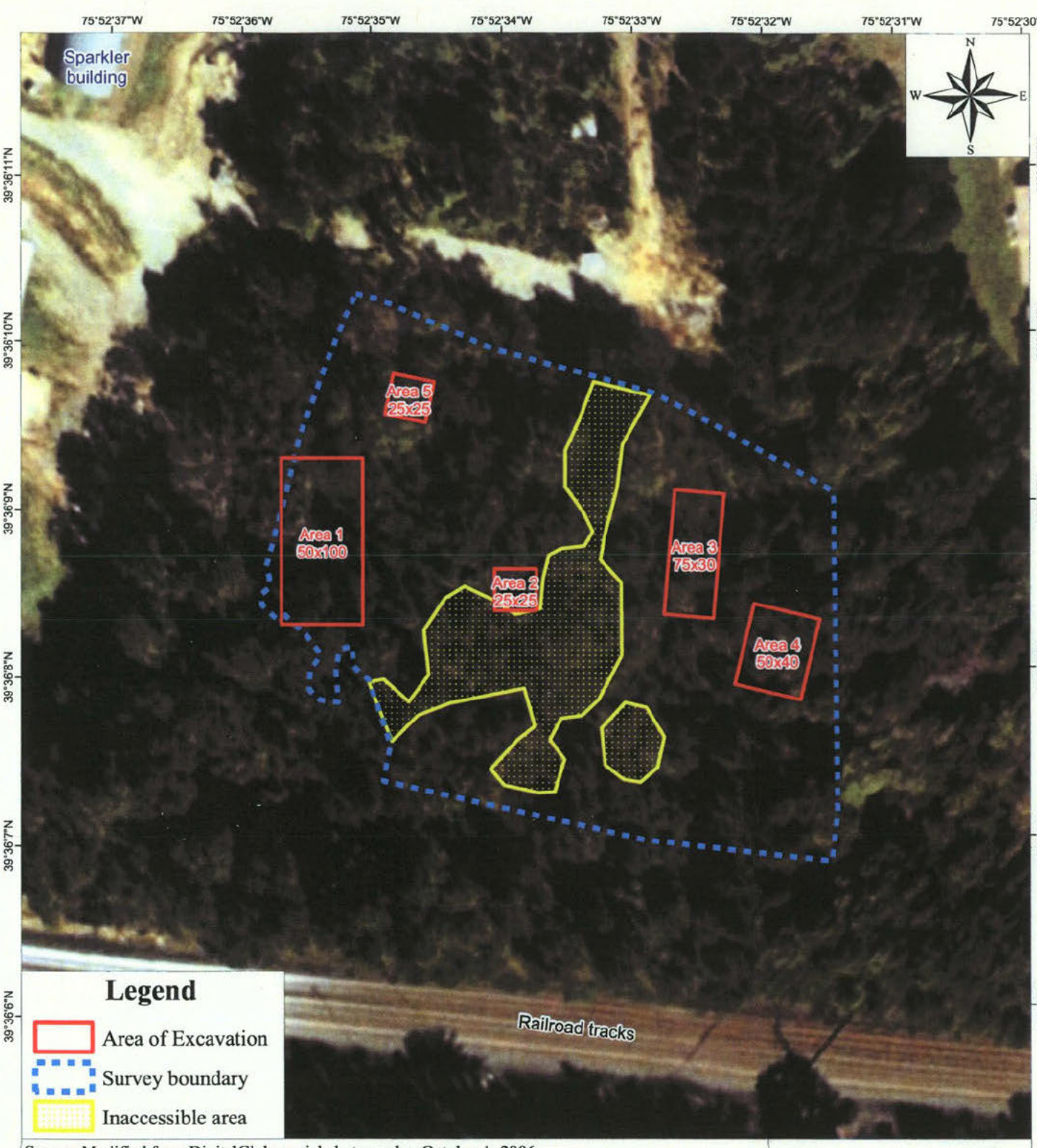
New Jersey Fireworks Site
Elkton, Cecil County, Maryland

Figure 2
Area of Excavation Map, Burn Pit 1

TDD No. E43-026-09-07-005
EPA Contract No. EP-S3-05-02

Map created on March 5, 2010
by [non responsive] Tetra Tech EM Inc.

TETRA TECH



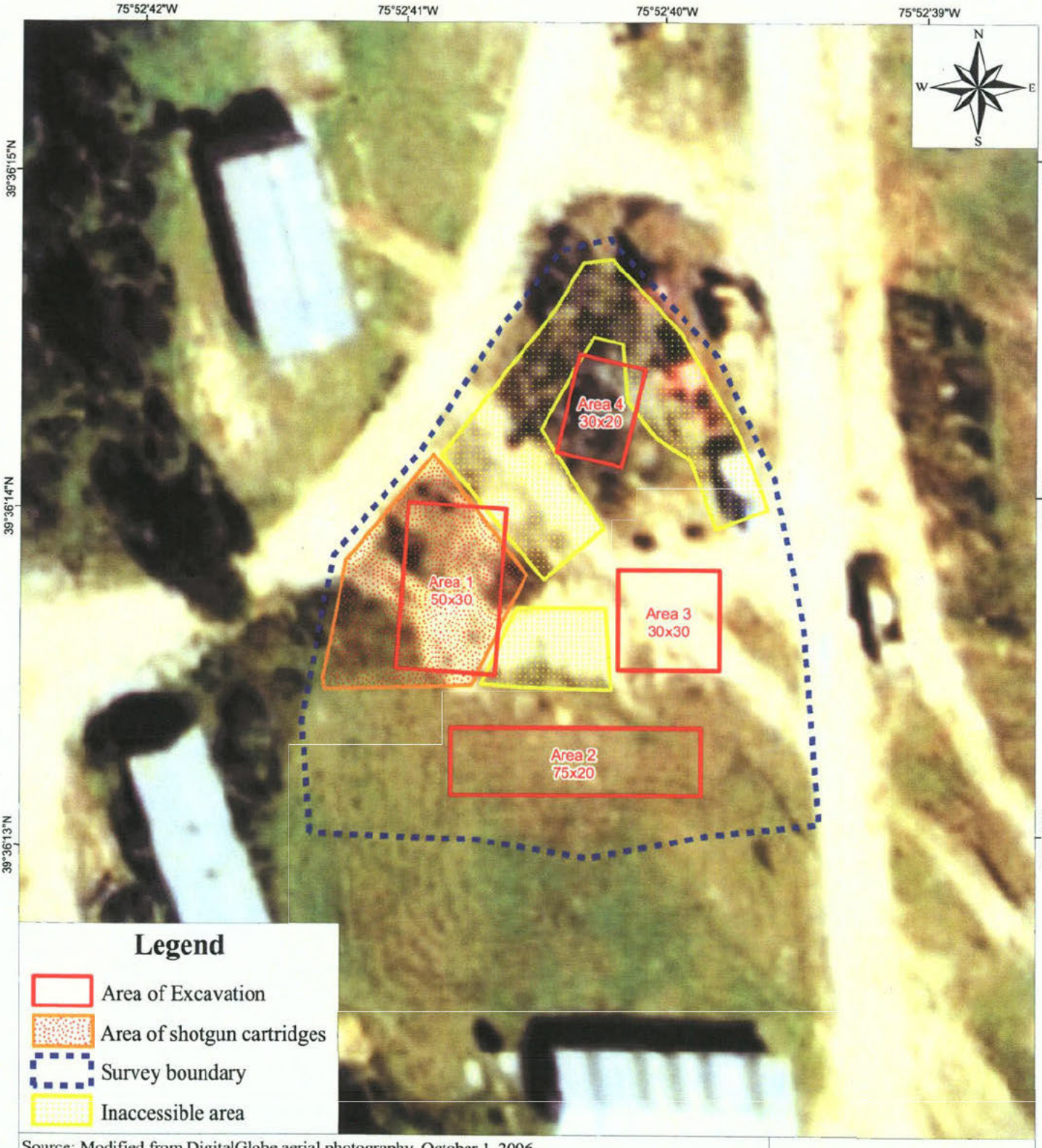
Source: Modified from DigitalGlobe aerial photography, October 1, 2006.
Note: Areas of excavation are labeled with their dimensions (in feet).

Approximate Site Location = ■

New Jersey Fireworks Site
Elkton, Cecil County, Maryland

Figure 3
Area of Excavation Map, Disposal Area 2

TDD No. E43-026-09-07-005 EPA Contract No. EP-S3-05-02	Map created on March 5, 2010 by [redacted] Tetra Tech EM Inc.	TETRA TECH



Source: Modified from DigitalGlobe aerial photography, October 1, 2006.
Note: Areas of excavation are labeled with their dimensions (in feet).

0 25 50 Feet

Approximate Site Location = ■

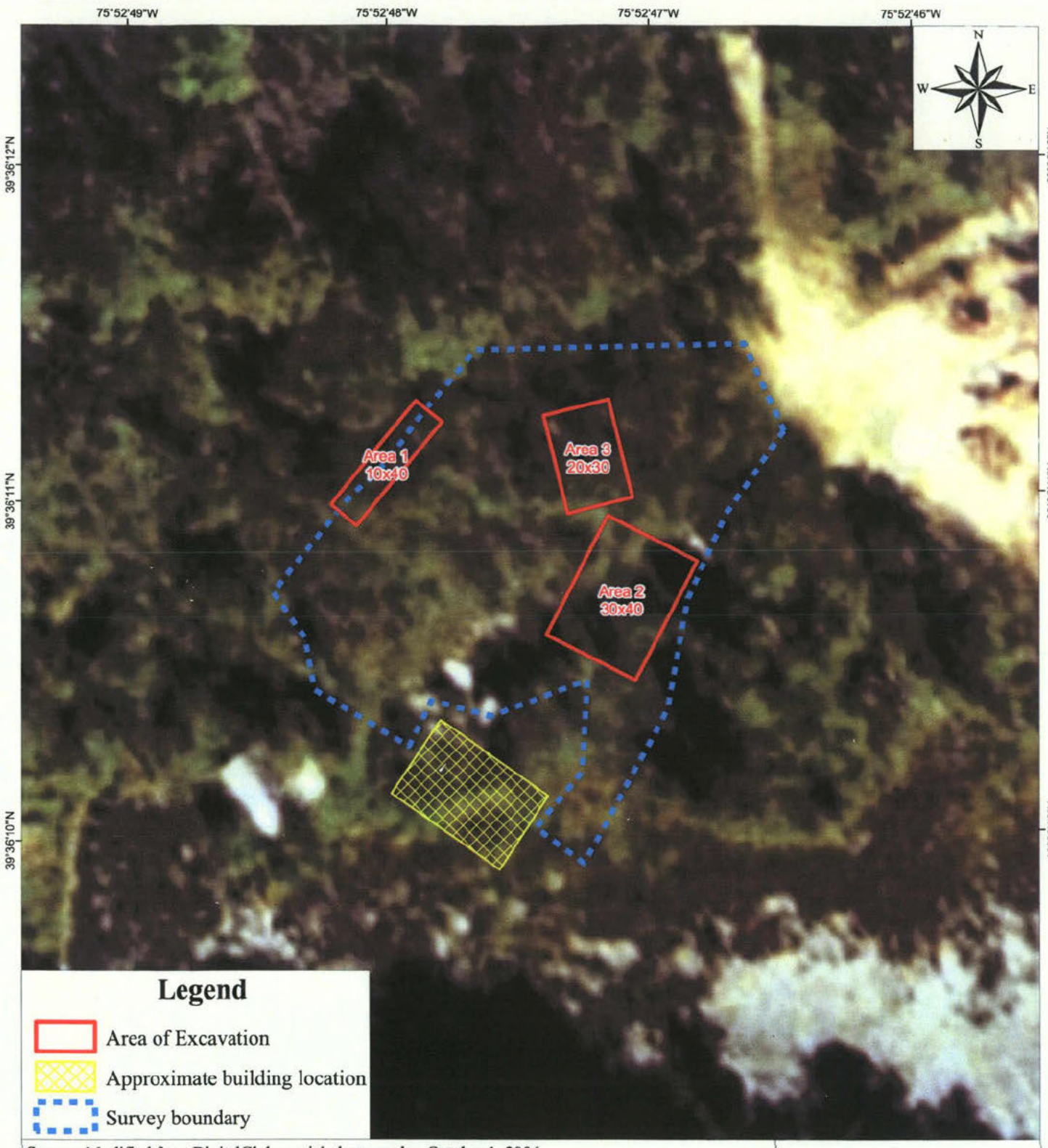
New Jersey Fireworks Site
Elkton, Cecil County, Maryland

Figure 4
Area of Excavation Map, Tracer Element Area

TDD No. E43-026-09-07-005
EPA Contract No. EP-S3-05-02

Map created on March 5, 2010
by [redacted] Tetra Tech EM Inc.

TETRA TECH



Source: Modified from DigitalGlobe aerial photography, October 1, 2006.
Note: Areas of excavation are labeled with their dimensions (in feet).

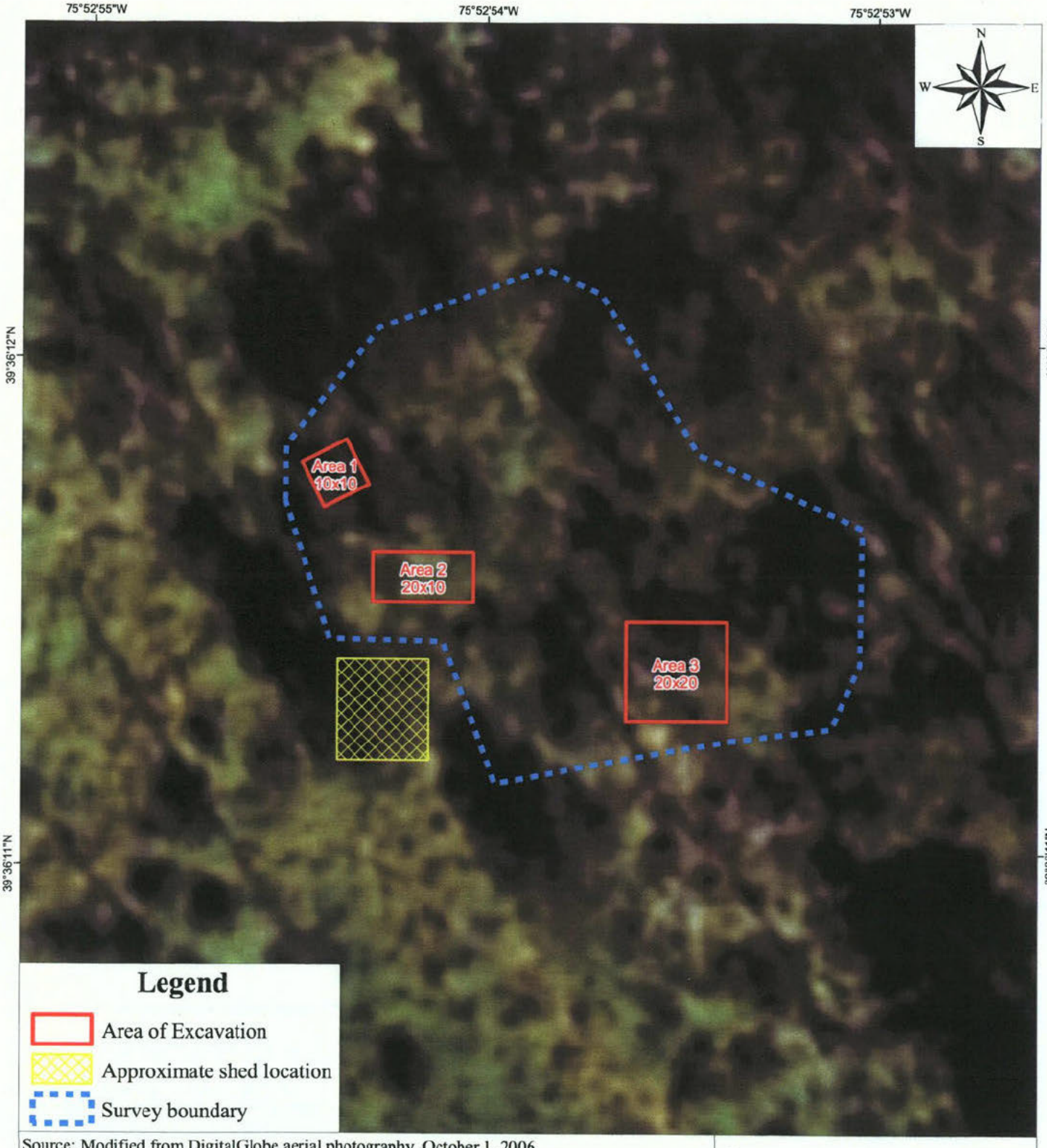
0 25 50 Feet

Approximate Site Location = ■

New Jersey Fireworks Site
Elkton, Cecil County, Maryland

Figure 5
Area of Excavation Map, Eastern Section, Southeast Area

TDD No. E43-026-09-07-005 EPA Contract No. EP-S3-05-02	Map created on March 5, 2010 by [non responsive] Tetra Tech EM Inc.	TETRA TECH



Source: Modified from DigitalGlobe aerial photography, October 1, 2006.
Note: Areas of excavation are labeled with their dimensions (in feet).

0 25 50 Feet

Approximate Site Location =

New Jersey Fireworks Site
Elkton, Cecil County, Maryland

Figure 6
Area of Excavation Map, Burn Pit 2

TDD No. E43-026-09-07-005
EPA Contract No. EP-S3-05-02

Map created on March 5, 2010
by [redacted] Tetra Tech EM Inc.

TETRA TECH


75°53'0"W
75°52'55"W
75°52'50"W
39°36'45"N
39°36'40"N
Area 1
60x20
Area 2
50x30
Legend
Traverse track
Area of Excavation
Inaccessible area (swamp)
Source: Modified from DigitalGlobe aerial photography, October 1, 2006.
Note: Areas of excavation are labeled with their dimensions (in feet).
New Jersey Fireworks Site
Elkton, Cecil County, Maryland
Figure 7
Area of Excavation Map, Central Section
Map created on March 5, 2010 by D. Call
0
50
100
Feet
TDD No. E43-026-09-07-005
EPA Contract No. EP-S3-05-02
TETRA TECH

APPENDIX D
HASP

WESTON - EPA REGION III START-4 Contract

Removal Assessment

SITE HEALTH AND SAFETY PLAN: DCN #W0019.1D.00116

1. SITE INFORMATION

Prepared by: [redacted]	**TDD:** WS01-10-08-004	**WO:** 20403.012.001.0019.00	**Date Prepared:** 2/13/2011
FPN#		**CERCLA ID#**	
START PTL (Name/ Number): [redacted]	**START FSO(Name/ Number):** [redacted]	**OSC R1 (Name/ Number):** Gregory Ham 215-514-9510	**Alternate OSC (Name/Number):**

Site Name and Address: New Jersey Fireworks, 1726 E. Old Philadelphia Road, Elkton, Cecil County, Maryland

Site History: *The site is a former pyrotechnics manafacturing facility. Although primarily used for fireworks, it is believe some MEC was manafactured onsite. Based on previous geophysical surveys, "areas of excavation" have been established to intrusively investigate using handtools.*

START Scope of Work:

(1) Marks boundaries of "Areas of Excavation"

(2) Perform "mag and dig" survey of areas.

(3) Intrusively investigate anomalies encountered to a depth of 2-ft

(4) MEC that is encountered and can be moved will be consolidated and disposed of.

(5) MEC that is encountered and cannot be moved will be disposed of using blow-in-place (BIP) procedures.

(6)

(7)

(8)

2. SITE HEALTH AND SAFETY PLAN REVIEW AND APPROVAL

	Name	Signature	Date
Reviewed by: FSO/ Project Team Leader	[redacted]		
Reviewed and Approved by: SO/OEHSM/CEHS			
Reviewed and Approved by: PTL/Scope of Work Leader			

3. TRAINING REQUIREMENTS (Attach Personnel's EHS Track Training/Medical Summary Page)

☒	40-Hour HAZWOPER	☒ Required for ALL personnel	☐ Required for FSO/PTL only
☒	8-Hour Annual Refresher	☒ Required for ALL personnel	☐ Required for FSO/PTL only
☒	Bloodborne Pathogens	☐ Required for ALL personnel	☒ Required for FSO/PTL only
☒	CPR	☐ Required for ALL personnel	☒ Required for FSO/PTL only
☒	First Aid-	☐ Required for ALL personnel	☒ Required for FSO/PTL only
☒	SHSC/FSO Training	☐ Required for ALL personnel	☒ Required for FSO/PTL only
☐	10-Hr Construction Safety	☐ Required for ALL personnel	☐ Required for FSO/PTL only
☐	30-Hr Construction Safety	☐ Required for ALL personnel	☐ Required for FSO/PTL only
☐	Confined Space Training	☐ Required for ALL personnel	☐ Required for FSO/PTL only
☐	Competent Person Fall Prevention and Protection	☐ Required for ALL personnel	☐ Required for FSO only
☐	Competent Person Trenching and Excavation	☐ Required for ALL personnel	☐ Required for FSO/PTL only
☐	Function Specific Dangerous Goods Shipping	☐ Required for ALL personnel	☐ Required for FSO/PTL only
☒	Site-Specific Training, Specify: __Site HAZCOM___	☒ Required for ALL personnel	☐ Required for FSO/PTL only
☐	Site-Specific Training, Specify: _____	☐ Required for ALL personnel	☐ Required for FSO/PTL only
☐	Site-Specific Training, Specify: _____	☐ Required for ALL personnel	☐ Required for FSO/PTL only
☐	Other: _____	☐ Required for ALL personnel	☐ Required for FSO/PTL only

4. MEDICAL SURVEILLANCE REQUIREMENTS (Attach Personnel's EHS Track Training/Medical Summary Page)

☒ Baseline/annual physical examination with physician clearance.
☒ Required for ALL personnel ☐ Required for FSO/PTL only

☐ Two-Year DOT physical examination with physician certification (DOT card).

☐ Annual Fit Test
☐ Qualitative Fit Test ☐ Required for personnel wearing Level B/C PPE ☐ Required for FSO/PTL only
☐ Quantitative Fit Test ☐ Required for ALL personnel ☐ Required for FSO/PTL only

☐ EPA periodic drug screening ☐ Required for ALL personnel ☐ Required for FSO/PTL only

☐ Site-specific medical monitoring protocol, Specify: _____
☐ Required for ALL personnel ☐ Required for FSO/PTL only

☐ Asbestos worker medical exam and physician clearance
☐ Required for ALL personnel ☐ Required for FSO/PTL only

5. SITE SECURITY ASSESSMENT

SITE SECURITY ASSESSMENT FORM

Site Description

- Client: EPA
- Site Name: New Jersey Fireworks
- Address, City, and State: 1726 E. Old Philadelphia Road, Elkton, Maryland
- Project Start Date and Estimated Completion Date: Start: March, 2011; Estimated Completion: April, 2011

Communication with SITE Point of Contact (POC)

- Site POC Name and Contact Information: Gregory Ham
- Date Contacted: 10/31/2010
- Site Setting: Commercial, Industrial, Residential, Other: Industrial
- Conversation Details:

Threat Indicators

- http://www.spotcrime.com – Website that allows you to search by state, city, and plug in address.
- List the number of arrests, assaults, burglary, robbery, shootings, and theft in your general area:
  AR: 0 **AS:** 0 **BG:** 0 **ROB:** 0 **SHT:** 2 **TFT:** 0
- Other relevant details:

Security Measures

- Will conduct field work during daylight hours: ☒ YES ☐ NO
- Buddy System at ALL times: ☒ YES ☐ NO If no, why?
- Routine phone check-ins with PTL or PC SO: ☐ YES ☐ NO
- Badge/WESTON identification required at all times: ☐ YES ☒ NO
- Site fenced/secure: ☒ YES ☐ NO
- Site security guards/hired protection: ☐ YES ☒ NO
- Other:

Closest Police Station / Emergency Services

Police station location and phone number: Elkton Police Department, (410) 398-4200

- Did you contact the police station: ☐ YES (Required for High Risk) ☒ NO
- If so, conversation details:

Approval

Security Risk Level: ☐ H ☐ M ☒ L
Field Safety Officer Name: [redacted] Signature:
PM Name [redacted] Signature:
Safety Officer Name [redacted] Signature:
Elevated to Division Safety Manager: ☐ YES ☐ NO:
If no, why not?

6. TASKS/DURATION (Fill in as appropriate)

Tasks	Task Number	Duration (Hours/Days)	PPE Level
☐ Mobilization and Demobilization			☐A ☐B ☐C ☐D ☐E
☐ Perimeter Recon			☐A ☐B ☐C ☐D ☐E
☐ Logbook Documentation			☐A ☐B ☐C ☐D ☐E
☐ Photo Documentation			☐A ☐B ☐C ☐D ☐E
☐ Scribe (FORMS II Lite / Data Management			☐A ☐B ☐C ☐D ☐E
☐ Decontamination			☐A ☐B ☐C ☐D ☐E
☐ Air Monitoring			☐A ☐B ☐C ☐D ☐E
☐ Air Sampling			☐A ☐B ☐C ☐D ☐E
☐ Soil/Solid Sampling			☐A ☐B ☐C ☐D ☐E
☐ Water/Liquid Sampling			☐A ☐B ☐C ☐D ☐E
☐ Drum Sampling			☐A ☐B ☐C ☐D ☐E
☐ AST/UST/Large Container Sampling			☐A ☐B ☐C ☐D ☐E
☐ HAZCAT			☐A ☐B ☐C ☐D ☐E
☐ Site Preparation/Clearing and Grubbing			☐A ☐B ☐C ☐D ☐E
☐	0019	10/10	☐A ☐B ☐C ☐D ☐E
☐			☐A ☐B ☐C ☐D ☐E
☐			☐A ☐B ☐C ☐D ☐E
☐			☐A ☐B ☐C ☐D ☐E

Notes:
Complete Attachment A, Behavior Based Safety (BBS) Field Review Form for the project as a whole, considering all tasks listed above, within 90 days of initiation of sustained project field activities.
Refer to Section 11 for PPE levels.

7. PHYSICAL HAZARDS

☒ *Buddy System* – The buddy or line of sight system is mandatory for all site personnel.

☐ *Heat Stress* – The FSO shall generally be guided by the WESTON OP in determining work/rest periods. Fluids shall be available at all times and encouraged during rest periods.

☐ *Cold Stress* – The FSO shall generally be guided by the WESTON OP in determining work/rest periods. Workers shall be provided with adequate warm clothing, rest opportunities, and exposure protection. Warm and/or sweet fluids shall also be provided during rest periods.

☒ *Inclement Weather* – Monitor local weather for warnings and watches for: thunderstorms, high winds, tornados, snow or ice storms, and incorporate response into the emergency Action Plan.

☒ *Precipitation* – Personnel should be aware of the increased risk of slips and falls on wet surfaces as well as exposure effects caused by wet clothing. Personnel should dress appropriately.

☐ *Lighting* – Fixed or portable lighting shall be maintained for dark areas or work after sunset to ensure that sufficient illumination is provided.

☐ *Work Near Water* – All personnel working in boats, on docks or generally within 10 feet of water deeper than 3 feet, swiftly moving water or surf shall wear approved personal flotation devices (PFDs) or work vests and wading boots as appropriate.

☒ *High Noise Levels* – Hearing protection shall be used in high noise areas (exceeding 85 dBA – generally where noise levels require personnel to raise their voices to be heard) as designated by the FSO.

☐ *Electrical Hazards* – Electrical hazards should be identified on the site work zone map and marked out as appropriate. All electrical equipment should have a ground fault circuit interrupter (GFCI).

☒ *Holes* – Open manholes, pits, trenches, or similar hazards should be noted on the site map and should be marked off on-site as appropriate.

☐ *Helicopter/Airplane Operations* – Pilots shall provide safety briefings for all passengers.

☐ *Motor Vehicles* – Drivers shall maintain a safe speed at all times and shall not be allowed to operate vehicles in a reckless manner. Seat belts will be worn. In backing situations where the rear of the vehicle cannot be clearly seen, one person shall act as a ground guide to assist the driver. In situations where ground clearance and soil conditions are not known, one person shall dismount and act as a guide. (*Also See Next Page*)

☒ *Terrain (Slips, Trips and Falls)* – All personnel will exercise due caution when walking through areas of uneven terrain and undergrowth to ensure proper footing.

☐ *Underground/Overhead Utilities* – All underground utilities must be marked out prior to conducting intrusive activities. At least 15 feet of distance must be maintained from overhead utilities.

☐ *Confined Spaces* – Confined spaces will not be normally entered by response personnel. If a confined space is to be entered, a specific confined space entry work permit will be developed for that operation.

☐ *Drum Handling* – Drums must be handled in accordance with 29 CFR 1910.120. Containers must be labeled and constructed in accordance with EPA (40 CFR 264-265, and 300) and DOT (49 CFR 171-178) regulations. Temporary holding/staging areas for drums and other containers shall be constructed to contain spillage, runoff, or accidental release of materials. Manual lifting and handling of drums shall be

kept to a minimum. To the extent possible, mechanical devices, drum slings or other mechanical assist devices designed for that purpose should be used.

☒ *Back Strain/Abdomen/Arm/Leg Muscle/Joint Injury from Improper Lifting* – Use mechanical devices whenever possible to lift. Recommended safe lifting weights for an average man or woman are 50 and 35 pounds, respectively, for occasionally lifting. Follow safe lifting procedures. Decrease weights for manual lifting if frequency of lifting is more than 4 times an hour.

☐ *Structural Integrity* – Check with knowledgeable persons before entering an old building or building which may have been damaged by wind, fire, or water to ensure the building is structurally sound. If in doubt, do not enter the building.

☐ *Traffic and Other Vehicle Hazards* – Wear high visibility vests or clothing rated for the traffic (Class II as a minimum) and wherever mobile equipment is operating. Establish pedestrian operator communication rules where construction equipment is operating.

☐ *Unexpected Release of Energy* – Ensure a Lockout/Tagout program is in effect where stored hazardous energy may exist. If there is potential for being affected by reactivation, participate in the program with individual locks.

See WESTON Field Operating Procedures (FLDs) for additional guidance.

Vehicle Use Assessment and Selection
Driving is one of the most hazardous and frequent activities for WESTON employees. The most appropriate type vehicle(s) authorized for use on this project is/are: 1. 2. 3.
The following Project Team members' qualifications and experience in driving these types of vehicles were evaluated and found to be acceptable (indicate vehicle type(s) number next to employee name). Team members driving any vehicle over 10,001-lb (e.g., box truck and/or ambulance) need to have a road test and DOT physical clearance every 2 years. 1. 2. 3. 4. 5. 6.
The project site was evaluated and a ***Traffic Control Plan*** ☐ *is required* ☒ *is not required.* *If required, prepare a* ***Traffic Control Plan*** *and provide as an appendix.*

8. BIOLOGICAL HAZARDS

☒ *Insect Stings* – Hornet, wasp or bee stings, mosquito. Personnel should avoid the nesting areas of these insects. Personnel who are allergic to these insects should carry bee sting kits. Personnel may find repellants containing DEET effective in keeping these insects away.

☐ *Poisonous Spiders* – Black widow or brown recluse. Wear gloves when working in areas where these spiders may be present. If bitten, seek medical attention immediately.

☒ *Ticks* – Personnel should wear Tyvek when working in wooded areas as a precaution. Barring this, personnel should wear light colored clothing and tuck pants into socks. Personnel should also wear a repellant containing DEET. Personnel should use the buddy system and perform a tick check after exiting wooded areas. Suspected bites should be reported immediately.

☐ *Animal Bites* – Personnel should use extreme caution when in contact with strange animals. If bitten, seek medical attention immediately.

☐ *Snake Bites* – Personnel should use extreme caution when working in areas known to be inhabited by snakes. Snake leggings or chaps should be worn as a precaution. If bitten, seek medical attention immediately.

☐ *Poisonous Plants* – Personnel should use caution when working in wooded areas. Tyvek suits may be worn as a precaution. All personnel should wear Ivy Block.

☐ *Etiological Hazards* – Personnel should use caution when working in areas that may contain etiological hazards. Tyvek suits and gloves may be worn as a precaution. All personnel should frequently wash their hands.

9. RADIOLOGICAL HAZARDS

☐ *Ionizing Radiation* – Any encounter with ionizing radiation requires the support from a Certified Health Physicist (CHP). All START personnel must wear a personal dosimeter which should consist of a TLD and/or Self-Reading Dosimeter (SRD).

☐ *Non-Ionizing Radiation* – To the extent possible, personnel should maintain a minimum distance of 30 feet from devices emitting radio or microwaves.

☒ *UV Light Exposure* – Personnel should dress so as to cover as much exposed skin as possible. Personnel should use a sunscreen with a protection factor (PF) of 15 or greater and should wear tinted safety glasses.

10. CHEMICAL HAZARDS TO PERSONNEL

The following chemicals are known to be at this site:

Chemical Contaminants of Concern		Chemicals/Materials Brought On-Site	
Chemical Name	Quantity/Concentration/ PEL/ IDLH	Chemical Name	Quantity

- A Site-Specific Hazard Communication Plan, Attachment B, is part of this HASP and includes MSDSs for these and any other hazardous substances brought on-site by START personnel.

Web Links

1. NIOSH Pocket Guide (Electronic Version) - http://www.cdc.gov/niosh/npg/npgsyn-a.html
2. Vermont SIRI MSDS Collection - http://hazard.com/msds/
3. J.T. Baker/Mallinkrodt MSDS Collection - http://www.mallbaker.com
4. NIOSH Chemical Safety Cards - http://www.cdc.gov/niosh/ipcsneng/neng0000.html

Additional Links

1. U.S. Environmental Protection Agency - http://epa.gov
2. U.S. Environmental Protection Agency OSC Home Page - http://www.epaosc.net
3. OSHA - http://www.osha.gov
4. National Atmospheric Release Advisory Center (NARAC) - http://narac.llnl.gov/

HEALTH AND SAFETY EVALUATION

WESTON FLDs - Maintained on FSO's/PTL's Computer

Physical Hazard Condition	Physical Hazard	Attach OP	WESTON OP Titles
Loud noise	Hearing loss/disruption of communication	☒	Section 7.0 - ECH&S Program Manual Occupational Noise & HC Program
Inclement weather	Rain/humidity/cold/ice/snow/lightning	☐	FLD02 - Inclement Weather
Steam heat stress	Burns/displaced oxygen/wet working surfaces	☐	FLD03 - Hot Process - Steam
Heat stress	Burns/hot surfaces/low pressure steam	☐	FLD04 - Hot Process - LT3
Ambient heat stress	Heat rash/cramps/exhaustion/heat stroke	☐	FLD05 - Heat Stress Prevention/Monitoring
Cold stress	Hypothermia/frostbite	☐	FLD06 - Cold Stress
Cold/wet	Trench/paddy/immersion foot/edema	☐	FLD02 - Inclement Weather
Confined spaces	Falls/burns/drowning/engulfment/electrocution	☐	FLD08 - Confined Space Entry
Industrial Trucks	Fork Lift Truck Safety	☐	FLD09 – Powered Industrial Trucks
Improper lifting	Back strain/abdomen/arm/leg muscle/joint injury	☒	FLD10 - Manual Lifting/Handling Heavy Objects
Uneven surfaces	Vehicle accidents/slips/trips/falls	☒	FLD11 - Rough Terrain
Poor housekeeping	Slips/trips/falls/punctures/cuts/fires	☒	FLD12 - Housekeeping
Structural integrity	Crushing/overhead hazards/compromised floors	☐	FLD13 - Structural Integrity
Hostile persons	Bodily injury	☐	FLD14 - Site Security
Improper cylinder. handling	Mechanical injury/fire/explosion/suffocation	☐	FLD16 - Pressure Systems - Compressed Gases
Water hazards	Poor visibility/entanglement/drowning/cold stress	☐	FLD17 - Diving
Water hazards	Drowning/heat/cold stress/hypothermia/falls	☐	FLD18 - Operation and Use of Boats
Water hazards	Drowning/frostbite/hypothermia/falls/electrocution	☐	FLD19 - Working Over Water
Vehicle hazards	Struck by vehicle/collision	☐	FLD20 - Traffic
Explosions	Explosion/fire/thermal burns	☒	FLD21 - Explosives
Moving mechanical parts	Crushing/pinch points/overhead hazards/electrocution	☐	FLD22 – Earth Moving Equipment
Moving mech. parts	Overhead hazards/electrocution	☐	FLD23 – Cranes, Rigging, and Slings
Working at elevation	Overhead hazards/falls/electrocution	☐	FLD24 - Aerial Lifts/Man lifts
Working at elevation	Overhead hazards/falls/electrocution	☐	FLD25 - Working at Elevation
Working at elevation	Overhead hazards/falls/electrocution/slips	☐	FLD26 - Ladders
Working at elevation	Slips/trips/falls/overhead hazards	☐	FLD27 - Scaffolding
Trench cave-in	Crushing/falling/overhead hazards/suffocation	☐	FLD28 - Excavating/Trenching
Physiochemical	Explosions/fires from oxidizing, flam./corr. Material	☐	FLD30 - Hazardous Materials Use/Storage
Physiochemical	Fire and explosion	☒	FLD31 - Fire Prevention/Response Plan Required
Physiochemical	Fire	☒	FLD32 - Fire Extinguishers Required
Structural integrity	Overhead/electrocution/slips/trips/falls/fire	☐	FLD33 - Demolition
Electrical	Electrocution/shock/thermal burns	☐	FLD34 - Utilities
Electrical	Electrocution/shock/thermal burns	☐	FLD35 - Electrical Safety
Burns/fires	Heat stress/fires/burns	☐	FLD36 - Welding/Cutting/Brazing/Radiography
Impact/thermal	Thermal burns/high pressure impaction/heat stress	☐	FLD37 - Pressure Washers/Sand Blasting
Impaction/electrical	Smashing body parts/pinching/cuts/electrocution	☐	FLD38 - Hand and Power Tools
Poor visibility	Slips/trips/falls	☐	FLD39 - Illumination
Fire/explosion	Burns/impaction	☐	FLD40 - Storage Tank Removal/Decommissioning
Communications	Disruption of communications	☐	FLD41 - Std. Hand/Emergency Signals
Energy/release	Unexpected release of energy	☐	FLD42 - Lockout/Tag-out
Biological Hazards	Biological Hazards at site	☐	FLD43 - Biological Hazards
Biological Hazards/BBP	Biological Hazards/BBP at site/First Aid Providers	☐	FLD44 - Biological Hazards – Bloodborne Pathogens Exposure Control Plan – First Aid Providers

HEALTH AND SAFETY EVALUATION (Continued)

WESTON FLDs - Maintained on FSO's/PTL's Computer (Continued)

Physical Hazard Condition	Physical Hazard	Attach OP	WESTON OP Titles
Infectious Waste	Infectious Waste at site/BBP/ at site/Infectious Waste	☐	FLD45 – Biological Hazards – Bloodborne Pathogens Exposure Control Plan – Work With Infectious Waste
Lead Contaminated sites	Lead poisoning	☐	FLD46 - Control of Exposure to Lead
Puncture/cuts	Cuts/ dismemberment/gouges	☐	FLD47 - Clearing, Grubbing and Logging Operations
Not applicable	Not applicable	☐	FLD48 – Federal, State, Local Regulatory Agency Inspections
Not applicable	Exposure to hazardous materials/waste	☐	FLD49 – Safe Storage of Samples
Cadmium	Exposure Control	☐	FLD50 – Cadmium Exposure Control Plan
Process Safety Procedure	Safety Procedure	☐	FLD51 – Process Safety Procedure
Asbestos	Asbestos Exposure	☐	FLD52 – Asbestos Exposure Control Plan
Hexavalent Chromium	Exposure Control Plan	☐	FLD53 – Hexavalent Chromium Exposure Control Plan
Benzene	Exposure Control Plan	☐	FLD54 – Benzene Exposure Control Plan
Hydrofluoric acid	Working with HF	☐	FLD55 – Working with Hydrofluoric Acid
Moving drill rig parts	Crushing/pinch points/overhead hazards/electrocution	☐	FLD56 – Drilling Safety
Vehicles/driving	Accidents,/fatigue/cell phone use	☐	FLD 57 – Motor Vehicle Safety
Improper material handling	Back injury/crushing from load shifts/equipment/tools	☐	FLD 58 – Drum Handling Operations
COC decontamination	COCs/slip, trip, and falls/waste generation/environmental compliance/PPE	☐	FLD59 - Decontamination
Drilling hazards	Electrocution/overhead hazards/pinch points	☐	Environmental Remediation Drilling Safety Guideline - 2005
Fatigue	Long work hours	☐	FLD60 – Employee Duty Schedule
Benzene/Gasoline	Benzene exposure	☐	FLD61 – Gasoline Contaminant Exposure

11. TASK-BY-TASK ASSESSMENTS

Task-By-Task Assessment (COMPLETE ONE SHEET FOR EACH TASK)
TASK DESCRIPTION
Investigation of Targets
EQUIPMENT REQUIRED/USED **(Be specific, e.g., hand tools, heavy equipment, instruments, PPE)**
Shovels, White's XLT, PPE
POTENTIAL HAZARDS/RISKS **(Complete Detailed Hazard Checklist in Attachment C if warranted for further information)**
Chemical
☐ Hazard Present Risk Level: ☐ H ☐ M ☐ L What justifies risk level?
Physical
☒ Hazard Present Risk Level: ☐ H ☐ M ☒ L What justifies risk level? Proper lifting procedures, driving hazards, cell phones, worker fatigue, and slips/trips/falls.
Biological
☐ Hazard Present Risk Level: ☐ H ☐ M ☐ L What justifies risk level?
RADIOLOGICAL
☐ Hazard Present Risk Level: ☐ H ☐ M ☐ L What justifies risk level?
LEVELS OF PROTECTION/JUSTIFICATION
Level D
SAFETY PROCEDURES REQUIRED AND/OR FIELD OPS UTILIZED

11. TASK-BY-TASK ASSESSMENTS (Continued)

Task-By-Task Assessment (COMPLETE ONE SHEET FOR EACH TASK)
TASK DESCRIPTION
Disposal of MEC.
EQUIPMENT REQUIRED/USED **(Be specific, e.g., hand tools, heavy equipment, instruments, PPE)**
See Explosive Site Plan for details
POTENTIAL HAZARDS/RISKS **(Complete Detailed Hazard Checklist in Attachment C if warranted for further information)**
Chemical
☐ Hazard Present Risk Level: ☐ H ☐ M ☐ L What justifies risk level?
Physical
☐ Hazard Present Risk Level: ☐ H ☐ M ☐ L What justifies risk level? Slips/trips/falls, rough terrain, ergonomics
Biological
☐ Hazard Present Risk Level: ☐ H ☐ M ☐ L What justifies risk level?
RADIOLOGICAL
☐ Hazard Present Risk Level: ☐ H ☐ M ☐ L What justifies risk level?
LEVELS OF PROTECTION/JUSTIFICATION
SAFETY PROCEDURES REQUIRED AND/OR FIELD OPS UTILIZED
See Explosive Site Plan for details.

11. TASK-BY-TASK ASSESSMENTS (Continued)

Task-By-Task Assessment
(COMPLETE ONE SHEET FOR EACH TASK)

TASK DESCRIPTION

Mark "areas of excavation" using GPS units.

EQUIPMENT REQUIRED/USED
(Be specific, e.g., hand tools, heavy equipment, instruments, PPE)

Trimble GPS unit

POTENTIAL HAZARDS/RISKS
(Complete Detailed Hazard Checklist in Attachment C if warranted for further information)

Chemical

☐ Hazard Present Risk Level: ☐ H ☐ M ☐ L
What justifies risk level?

Physical

☒ Hazard Present Risk Level: ☐ H ☐ M ☒ L
What justifies risk level? Slips, trips, falls.

Biological

☐ Hazard Present Risk Level: ☐ H ☐ M ☐ L
What justifies risk level?

RADIOLOGICAL

☐ Hazard Present Risk Level: ☐ H ☐ M ☐ L
What justifies risk level?

LEVELS OF PROTECTION/JUSTIFICATION

Level D

SAFETY PROCEDURES REQUIRED AND/OR FIELD OPS UTILIZED

11. TASK-BY-TASK ASSESSMENTS (Continued)

Task-By-Task Assessment
(COMPLETE ONE SHEET FOR EACH TASK)

TASK DESCRIPTION

EQUIPMENT REQUIRED/USED
(Be specific, e.g., hand tools, heavy equipment, instruments, PPE)

POTENTIAL HAZARDS/RISKS
(Complete Detailed Hazard Checklist in Attachment C if warranted for further information)

Chemical

☐ Hazard Present Risk Level: ☐ H ☐ M ☐ L
What justifies risk level?

Physical

☐ Hazard Present Risk Level: ☐ H ☐ M ☐ L
What justifies risk level?

Biological

☐ Hazard Present Risk Level: ☐ H ☐ M ☐ L
What justifies risk level?

RADIOLOGICAL

☐ Hazard Present Risk Level: ☐ H ☐ M ☐ L
What justifies risk level?

LEVELS OF PROTECTION/JUSTIFICATION

SAFETY PROCEDURES REQUIRED AND/OR FIELD OPS UTILIZED

11. TASK-BY-TASK ASSESSMENTS (Continued)

Task-By-Task Assessment
(COMPLETE ONE SHEET FOR EACH TASK)

TASK DESCRIPTION

EQUIPMENT REQUIRED/USED
(Be specific, e.g., hand tools, heavy equipment, instruments, PPE)

POTENTIAL HAZARDS/RISKS
(Complete Detailed Hazard Checklist in Attachment C if warranted for further information)

Chemical

☐ Hazard Present Risk Level: ☐ H ☐ M ☐ L
What justifies risk level?

Physical

☐ Hazard Present Risk Level: ☐ H ☐ M ☐ L
What justifies risk level?

Biological

☐ Hazard Present Risk Level: ☐ H ☐ M ☐ L
What justifies risk level?

RADIOLOGICAL

☐ Hazard Present Risk Level: ☐ H ☐ M ☐ L
What justifies risk level?

LEVELS OF PROTECTION/JUSTIFICATION

SAFETY PROCEDURES REQUIRED AND/OR FIELD OPS UTILIZED

12. DAILY SITE SAFETY BRIEFINGS/HAZARD COMMUNICATION (HAZCOM)

- All personnel shall be provided with an initial and daily site safety briefing to communicate the nature, level, and degree of hazards expected on-site.
  - The daily safety meeting should incorporate but may not be limited to: scope of work; weather conditions; physical, chemical, biological, and radiological hazards; define PPE and doffing/donning procedures and required locations; special precautions (e.g., allergic to bee stings, epi-pen located on the truck, personnel on-site and their roles/responsibilities).
- All personnel will also receive briefings when significant changes in site conditions occur, and the Health and Safety Plan will be revised accordingly.

13. COMMUNICATIONS

- General signals during respirator usage:
  - THUMBS UP – I'm OK/I Agree
  - THUMBS DOWN – I Don't Agree
  - HANDS ACROSS THROAT – Out of Air/Trouble Breathing
  - GRAB HAND/ARM – Come with Me/Evacuate Site Now
  - HANDS ON HEAD – I Need Assistance
- Radio Communications
  - Working – Channel 1
  - Emergency – Channel 2
- Mobile Telephone(s) *(See Section 1 and Section 14, Emergency Contacts)*

14. CONTINGENCIES AND EMERGENCY CONTACTS

CONTINGENCIES		
Emergency Contacts and Phone Numbers		
Agency	**Contact**	**Phone Number**
WorkCare WESTON Medical Director WorkCare WESTON Program Administrator	"non responsive based on revised scope"	From 6 am to 4:30 pm Pacific Time call 800-455-6155 dial 0 or extension 175, Heather Lind, to request the on-call clinician.
After-Business Hours Contact (In Case of Emergency Only)	On-call clinician	4:31 p.m. – 5:59 a.m. Pacific Time; all day Saturday, Sunday and Holidays, call 800-455-6155 Dial 3 to reach the after-hours answering service. Request that the service connect you with the on-call clinician or the on-call clinician will return your call within 30 minutes.
WESTON Health & Safety (CORP)	"non responsive based on revised scope"	"non responsive based on revised scope"
WESTON Health & Safety (MA-DIV)		
WESTON EPA Region III START Health & Safety Officers		
START Program Manager		
START Response Manager		
Fire Department		911
Police Department		911
START FSO Cell Phone		"non responsive based on revised scope"
START PTL Cell Phone		
EPA OSC Cell Phone	Gregory Ham	215-514-9510
WESTON Central Equipment Stores (CES)	"non responsive based on revised scope"	"non responsive based on revised scope"
Nearest Telephone		

Local Medical Emergency Facility(s)		
Name of Hospital: Christiana Care Hospital		
Address: 4755 Ogletown Stanton Road, Newark, DE		Phone No.: 302-733-1000
Name of Contact:		Phone No.:
Type of Service: ☐ Physical trauma only ☐ Chemical exposure only ☒ Physical trauma and chemical exposure ☒ Available 24 hours	**Route to Hospital:** **(See Attached)**	**Travel time from site:** 25 minutes **Distance to hospital:** 14.6 miles **Name/no. of 24-hr ambulance service:** /911
Secondary of Specialty Service Provider		
Name of Hospital:		
Address:		Phone No.:
Name of Contact:		Phone No.:
Type of Service: ☐ Physical trauma only ☐ Chemical exposure only ☐ Physical trauma and chemical exposure ☐ Available 24 hours	**Route to Hospital (see attached):**	**Travel time from site:** **Distance to hospital:** **Name/no. of 24-hr ambulance service:** / 911

Hospital Location Map and Directions Sources

1. Yahoo Maps- http://maps.yahoo.com
2. Google Maps- http://google.com/maps

15. DECONTAMINATION PROCEDURES

☐ Wet Decontamination: Set-up for emergency use

☐ Soap/water ☐ Bleach/water

☐ Dry Decontamination

The following decontamination stations should be set up in each decontamination zone:

- Segregated equipment drop
- Disposable glove, bootie, and coverall removal and segregation station
- Safety glasses and hard hat removal station
- Hand and face wash and rinse

If site conditions require upgrade to Level C, a station must be set up for respirator removal, respirator decontamination, and cartridge disposal.

☐ All investigative derived waste (IDW) generated will be placed in appropriate containers, labeled, and stored on-site for eventual disposal.

Refer to Attachment D for additional Decontamination Procedures.

PPE Reference Web Links

1. MSA Response Respirator Selector - http://msanet.com/response/chemicalsearch.asp
2. MSA Cartridge Life Expectancy Calculator - http://webapps.msanet.com/cartlife/
3. Scott Respirator Selection - http://www.scotthealthsafety.com/americas/en/products/airpurifying/airpurifying.aspx
4. Kappler Suit Smart PPE Selector - http://www.kappler.com/techdata_main.html
5. DuPont™ SafeSPEC™ - http://www2.dupont.com/NOWApp/DPPRequestGateway/

16. SITE AIR MONITORING PROGRAM

Air Monitoring Instrument Selection and Initial Check Record

Reporting Format: ☐ Field Notebook ☐ Field Data Sheets* ☐ Air Monitoring Log ☐ Trip Report ☐ Other

Instrument	Task No.(s)	Number Required	Number Received	Checked Upon Receipt	Comment	Initials
☐ RADIATION				☐		
☐ GM (Pancake)				☐		
☐ NaI (Micro R)				☐		
☐ ZnS (Alpha Scintillator)				☐		
☐ Other ____				☐		
☐ PID				☐		
☐ MiniRAE/MultiRAE (10.6 lamp)				☐		
☐ TVA 1000 (PID/FID)				☐		
☐ Other ____				☐		
☐ FID				☐		
☐ TVA 1000 (FID/PID)				☐		
☐ Other				☐		
☐ Multiple Sensor Instruments				☐		
☐ MultiRAE (LEL/O2/H2S/CO/PID 10.6 lamp)				☐		
☐ AreaRAE (LEL/O2/H2S/CO/PID 10.6 lamp)				☐		
☐ MultiRAE (LEL/O2/PID 10.6 lamp/ Other: /)				☐		
☐ AreaRAE (LEL/O2/PID 10.6 lamp / Other: /)				☐		
☐ Particulate				☐		
☐ PDR-1000				☐		
☐ DataRam				☐		
☐ Single Gas Monitor				☐		
Specify Chemical: ____				☐		
☐ Personal Sampling Pump				☐		
Specify Media: ____				☐		
☐ Colorimetric tubes w/ pump				☐		
Specify (MSA, Dräger, Sensidyne)						
☐ Tubes/type: ____				☐		

For additional information, see Attachment E, Air Monitoring Logs and Calibration Records.

Action Levels				
These Action Levels, if not defined by regulation, are some percent (usually 50%) of the applicable PEL/TLV/REL. That number must also be adjusted to account for instrument response factors.				
	Tasks	**Action Level**		**Action**
☐ **Explosive atmosphere**		Ambient Air Concentration	Confined Space Concentration	
		<10% LEL	0 to 1% LEL	Work may continue. Consider toxicity potential.
		10 to 25% LEL	1 to 10% LEL	Work may continue. Increase monitoring frequency.
		>25% LEL	>10% LEL	Work must stop. Consult DSM or CIH.
☐ **Oxygen**		Ambient Air Concentration	Confined Space Concentration	
		<19.5% O_2	<19.5% O_2	Leave area. Re-enter only with self-contained breathing apparatus.
		19.5% to 25% O_2	19.5% to 23.5% O_2	Work may continue. Investigate changes from 21%.
		>25% O_2	>23.5% O_2	Work must stop. Consult DSM or CIH.
☐ **Radiation**		< 3 times background		Continue work.
		3 times background to < 1 mR/hour		Radiation above background levels (normally 0.01-0.02 mR/hr) signifies possible radiation source(s) present. Continue investigation with caution. Perform thorough monitoring. Consult with a Health Physicist.
		> 1 mrem/hour		Potential radiation hazard. Evacuate site. Continue investigation only upon the advice of Health Physicist.
☐ **Gases and vapors** Action Level formula (1/2 PEL * RF)	All	Action levels: 10 units sustained on FID/PID in breathing zone for 10 minutes		Evacuate zone, upgrade PPE, apply engineering controls, and obtain COC-specific instruments.
☐ **Solids / Particulate (dust) hazards** Action Level Formula (10^6 * PEL) / (Concentration * 2)	All	Action levels: 1.5 mg/m3 sustained on PDR in breathing zone for 10 minutes		Evacuate zone, upgrade PPE, apply engineering controls, and obtain COC-specific instruments.

17. SITE HEALTH AND SAFETY PLAN ACKNOWLEDGEMENT

Name (Printed)	Signature	Affiliation	Date

Disclaimer: This Health and Safety Plan (HASP) was prepared for work under the Superfund Technical Assessment and Response Team (START) Contract. Use of this HASP by WESTON and its subcontractors is intended to fulfill the OSHA requirements found in 29 CFR 1910.120. Items not specifically covered in this HASP are included by reference to 29 CFR 1910 and 1926.

Name (Printed)	Signature	Affiliation	Date

Disclaimer: This Health and Safety Plan (HASP) was prepared for work under the Superfund Technical Assessment and Response Team (START) Contract. Use of this HASP by WESTON and its subcontractors is intended to fulfill the OSHA requirements found in 29 CFR 1910.120. Items not specifically covered in this HASP are included by reference to 29 CFR 1910 and 1926.

ATTACHMENT A
BBS FIELD REVIEW FORM

(To be completed within 90 days of initiation of sustained project field activities)

BBS FIELD REVIEW FORM

Site Name: _____ WO #: _____

Location: _____ Date: _____ Field Activities Began: _____

Name of Designated, Qualified Field Safety Officer On-Site: _____

DESCRIPTION OF FIELD ACTIVITIES: Check one

☐ Drilling/Soil Sampling ☐ Groundwater Sampling ☐ Air Sampling ☐ IH Sampling
☐ Test Pits/Trenching ☐ UST Removal ☐ Remediation ☐ Vertical Construction
☐ Demolition ☐ Fuels ☐ MEC\UXO\DMM ☐ Recon
☐ Other: _____

BEHAVIOR-BASED SAFETY (BBS) PROGRAM ELEMENTS

Item No.	Yes	No	Element
1	☐	☐	All WESTON personnel on-site have received BBS orientation.
2	☐	☐	WESTON's "Safety Vision" has been communicated to all project team members.
3a	☐	☐	Project has SMART safety goals. ☐ Field activities ☐ Vehicle safety ☐ Other — If yes, list:
3b	☐	☐	SMART goals are documented and communicated to field team, including contractors.
4	☐	☐	The client has a BBS program to which WESTON must adhere.
5	☐	☐	Baseline safety data exists for the scheduled work tasks/activities.
6	☐	☐	Targeted behaviors are identified for observation during the field audit. — If yes, list:
7	☐	☐	Health and Safety Plan (HASP) posted on-site and orientation given to each person.
8	☐	☐	Initial HASP meeting held and documented before work began.
9	☐	☐	Daily EHS briefings identify the day's tasks and related potential unsafe behaviors.
10	☐	☐	Daily EHS briefings are interactive.
11	☐	☐	Daily EHS Meetings are conducted by: ☐ SM ☐ FSO ☐ Other (Identify):
12	☐	☐	Site personnel are provided with additional training or support to complete tasks safely.
13	☐	☐	Question and answer time is available to all site personnel.
14	☐	☐	A formal observation program is in place (client-specific). Observations are documented. If yes, observations are performed by: _____
15	☐	☐	An informal observation program is in place. Observations are documented. If yes, observations are performed by: _____ Type: ☐ Targeted behavior checklist – corporate ☐ Site-specific ☐ Observed actively caring behaviors
16	☐	☐	Feedback mechanisms are in place. — If yes, identify mechanisms:
17	☐	☐	The field team leader or designee recognizes and corrects unsafe behaviors in the field.
18	☐	☐	The field team leader shows commitment to the Actively Caring concept and encouragement of Actively Caring behaviors among team members.
19a	☐	☐	The Short Service Employee (SSE) Policy is followed for anyone with WESTON for 6 months or less or in current position for 6 months or less.

Item No.	Yes	No	Element
19b	☐	☐	A mentor is assigned to the SSE.
19c	☐	☐	The SSE is designated through use of: _____ (e.g., specific colored hat, badge/sticker)
19d	☐	☐	Site team consists of minimum number of SSEs.
Comments/Additional Information – Best Practices Observed:			

CERTIFICATION OF PERSONNEL

Item No.	Yes	No	Element
1a	☐	☐	Site is subject to HAZWOPER Regulations
1b	☐	☐	If yes, all personnel on-site have current HAZWOPER training.
1c	☐	☐	If (1a) is yes, all personnel on-site have current HAZWOPER medical.
2	☐	☐	Site requires respirator use. If yes, all personnel on-site are: ☐ medically qualified for respirator use ☐ trained for respirator use ☐ fit-tested for respirators to be used
3a	☐	☐	Site/client requires other standard specific medical certification. If yes, specify requirement(s):
3b	☐	☐	Site/client requires substance-specific medical. If yes, list substance(s):
3c	☐	☐	Site/client requires drug and alcohol testing.
3d	☐	☐	Physical capability medical required. If yes, indicate type: ☐ General physical capability ☐ Equipment/vehicle operation ☐ Other: _____
4	☐	☐	Site requires special supervisor training and/or certification. If yes, check requirement: ☐ HAZWOPER supervisor training ☐ Asbestos abatement ☐ Construction 30 hour course ☐ Lead Abatement ☐ Construction-site manager's safety course ☐ Competent person. List type(s): ☐ Qualified person. List type(s):
Comments/Additional Information:			

MEDICAL AND FIRST AID

Item No.	Yes	No	Element
1	☐	☐	First-aid kits accessible and identified.
2	☐	☐	Emergency eye/safety washes available. ☐ ANSI compliance required.
3	☐	☐	First-aid kits and eyewash capabilities inspected weekly and documented (for site projects greater than 1 week in duration).
4	☐	☐	At least two first-aid/CPR-trained persons are on-site at all times when working.
Comments/Additional Information:			

EMERGENCY ACTION PLANS

Item No.	Yes	No	Element
1	☐	☐	Emergency Action Plan (EAP) posted on-site.
2	☐	☐	EAP orientation provided.
3	☐	☐	Emergency telephone numbers posted.
4	☐	☐	Emergency routes posted. ☐ Map ☐ Written Directions.
5	☐	☐	Emergency plan and signals reviewed with all persons.
Comments/Additional Information:			

HAZARD COMMUNICATION

Item No.	Yes	No	Element
1	☐	☐	A site-specific HAZCOM Plan is in effect and up to date.
2	☐	☐	A chemical inventory and MSDSs are available. Where?
3	☐	☐	Employees trained in the HAZCOM Plan and chemical hazards.
4	☐	☐	100% compliance with HAZCOM observed.
5	☐	☐	Coaching on HAZCOM observed.
Comments/Additional Information:			

PERSONAL PROTECTION

Item No.	Yes	No	Element
1	☐	☐	PPE Plan has been verified by a Qualified person.
2	☐	☐	All PPE meets applicable ANSI/OSHA/EPA criteria.
3	☐	☐	Hard hat, eye, hearing, foot and other PPE areas are defined and signs in place.
4	☐	☐	Levels of protection (LOP) are established.
5	☐	☐	Site control zones (Exclusion, CRZ, Support) are indicated clearly.
6	☐	☐	All employees know their LOP scheme.
7	☐	☐	OSHA respirator program in place.
8	☐	☐	Employees fit tested: ☐ QLFT ☐ QNFT ☐ On-site ☐ Current
9	☐	☐	PPE inspected and checked before use.
10	☐	☐	PPE stored properly.
11	☐	☐	Defective equipment tagged out.
12	☐	☐	Sufficient quantities of equipment available.
13	☐	☐	Monitoring Instruments Plan in place and communicated.
14	☐	☐	Instruments maintained and calibrated.
15	☐	☐	Maintenance & Calibration logs up to date.
16	☐	☐	Flotation devices worn when working on or over water.
17	☐	☐	PPE use 100% safe.
18	☐	☐	PPE coaching observed.
Comments/Additional Information:			

Item No.	Yes	No	Element

DECONTAMINATION

Item No.	Yes	No	Element
1	☐	☐	Decontamination system set up on-site.
2	☐	☐	Decontamination system used according to safety plan.
3	☐	☐	Contamination reduction corridor clearly delineated in the CRZ.
4	☐	☐	Appropriate waste receptacles available for all waste.
5	☐	☐	Receptacles properly closed at end of day.
6	☐	☐	All decon liquids properly contained and disposed.
7	☐	☐	All wastes disposed of according to approved plan.
8	☐	☐	All personnel received decontamination training.
9	☐	☐	All reusable personal protective gear deconned and disinfected at least daily.
10	☐	☐	Decontamination process 100% followed.
11	☐	☐	Decontamination coaching observed.
Comments/Additional Information:			

HIGHWAY VEHICLE DRIVING

Item No.	Yes	No	Element
1	☐	☐	Highway vehicle driving addressed in HASP.
2	☐	☐	Highway vehicle driving regularly addressed in safety meetings.
3	☐	☐	Fatigue Management policy discussed with all site workers.
4	☐	☐	Hands-free cell phone use only.
5	☐	☐	All cell phone/radio use limited while driving.
6	☐	☐	100% safe driving observed.
7	☐	☐	Safe driving coaching observed.
8	☐	☐	Journey Management Plan in place.
Comments/Additional Information:			

WORKING AT ELEVATION

Item No.	Yes	No	Element
1	☐	☐	Ladders are used 100% safely.
2	☐	☐	Ladders used are appropriate for work performed.
3	☐	☐	Portable ladders are inspected before use.
4	☐	☐	Portable ladders are secured from falling.
5	☐	☐	Fixed ladders are inspected for structural integrity.
6	☐	☐	Coaching on ladder use observed.

Item No.	Yes	No	Element
7	☐	☐	Scaffolds are set up and dismantled under supervision of a competent person.
8	☐	☐	Scaffolding is inspected daily.
9	☐	☐	Scaffold inspections are documented.
10	☐	☐	All site personnel are trained to use scaffolding safely.
11	☐	☐	Scaffolding is used 100% safely.
12	☐	☐	Coaching on safe scaffold use observed.
13	☐	☐	Only qualified persons operate aerial or scissor lifts.
14	☐	☐	Personnel working at elevation in aerial or scissor lifts are protected from falling by fall limiting or arrest systems as required by regulation or manufacturers.
15	☐	☐	Aerial or scissor lifts are moved while workers are elevated only if permitted by manufacturers.
16	☐	☐	Travel routes for aerial or scissor lifts are inspected for impediments prior to moving.
17	☐	☐	Aerial and scissor lifts are inspected prior to each shift.
18	☐	☐	Aerial and scissor lifts are used 100% safely.
19	☐	☐	Coaching in safe use of aerial and scissor lifts observed.
20	☐	☐	The hierarchy of controls (elimination, substitution, engineering, administrative) is considered prior to performing work at elevation where reliance is placed on fall limiting or fall arresting system.
21	☐	☐	Fall prevention plans are developed by a competent person.
22	☐	☐	Horizontal lifelines are installed by qualified persons.
23	☐	☐	Fall prevention plans include plans for rescue.
24	☐	☐	Fall limiting and arrest equipment is inspected prior to use.
25	☐	☐	Fall limiting and arrest equipment is worn properly.
26	☐	☐	Anchor points are designed and used properly.
27	☐	☐	100% safe use of fall arrest and limiting systems.
28	☐	☐	Coaching is observed on use of fall arrest and limiting systems.
Comments/Additional Information:			

STRUCK-BY HAZARDS

Item No.	Yes	No	Element
1	☐	☐	Struck-by hazards are identified and addressed in the HASP.
2	☐	☐	Struck-by hazards are addressed in daily safety meetings.
3	☐	☐	High visibility vests are worn by all personnel working in areas where moving equipment is in use and along roadways.
4	☐	☐	A written Traffic Control Plan is implemented.
5	☐	☐	Operators and pedestrians are trained to gain eye contact before crossing vehicle travel ways.
6	☐	☐	Vehicles with blind spots are equipped with backup or motion alarms.
7	☐	☐	Qualified spotters are provided for vehicle backing in congested areas.
8	☐	☐	Qualified flaggers are provided where vehicle traffic enters or crosses public roadways.
9	☐	☐	Signs meeting requirements of the MUTCD are used to alert roadway users impacted by vehicles entering, crossing or leaving public roadways.
10	☐	☐	Site speed limits are posted and followed.
11	☐	☐	Traffic routes are established and followed in congested areas.

Item No.	Yes	No	Element
12	☐	☐	100% safe operation is observed.
13	☐	☐	Coaching for traffic safety is observed.
14	☐	☐	Materials which can fall from above or be blown are secured.
15	☐	☐	Exclusion zones are established around operations which can expel material or objects at velocity.
16	☐	☐	Personnel are not permitted under loads.
17	☐	☐	Personnel are not permitted to cross under conveyors unless guarding is provided.
18	☐	☐	Taglines are used for positioning elevated loads.
19	☐	☐	Lifting equipment operators know not to fly loads over site personnel.
20	☐	☐	Exclusion zones are established around masonry walls under construction or being demolished.
21	☐	☐	Preformed walls or lift slab concrete is secured during placement.
22	☐	☐	Power tools designed to accommodate guards are equipped with functional guards.
23	☐	☐	When work is being performed overhead, tools not in use are secured or placed in holders.
24	☐	☐	The use of cranks on hand-powered winches or hoists is prohibited unless the hoists or winches are provided with positive self-locking dogs.
25	☐	☐	Hand wheels with exposed spokes, projecting pins, or knobs are not used.
26	☐	☐	Abrasive wheels are provided with safety guards.
27	☐	☐	Abrasive wheels for chop saws are chosen based on material to be cut.
28	☐	☐	Safety clips or retainers are installed and maintained on pneumatic impact tools to prevent dies and tools from being accidentally expelled from the barrel.
29	☐	☐	Safety lashings are provided at connections between tool and hose and at all quick makeup type connections.
30	☐	☐	Only qualified persons operate explosive-actuated tools.
31	☐	☐	Chain saws, torches or other power tools are not used to cut above shoulder height.
32	☐	☐	Powered nailers have a safety device on the muzzle to prevent the tool from ejecting fasteners unless the muzzle is in contact with the work surface.
33	☐	☐	Contact trip devices or triggers are not secured in an "on" position.
34	☐	☐	Workers using tools are positioned so work of one does not adversely affect others.
35	☐	☐	100% safe use of tools observed.
36	☐	☐	Coaching on tool use observed.
Comments/Additional Information:			

CAUGHT -IN HAZARDS

Item No.	Yes	No	Element
1	☐	☐	Caught-in hazards are identified and addressed in the HASP.
2	☐	☐	Caught-in hazards are addressed in daily safety meetings.
3	☐	☐	Pinch point, power drives, belts, etc. are guarded.
4	☐	☐	Lockout-tagout (LOTO) used when performing maintenance.
5	☐	☐	All site personnel trained in LOTO Program.
6	☐	☐	100% Safe LOTO procedures observed.
7	☐	☐	Coaching on LOTO observed.
8	☐	☐	A competent person for excavation is on-site when excavation is performed.

Item No.	Yes	No	Element
9	☐	☐	Utility check performed, reconfirmed and documented before excavation or drilling per FLD 34.
10	☐	☐	At least one utility competent person is on-site.
11	☐	☐	Competent person determines appropriate protection to prevent excavation cave in.
12	☐	☐	Guardrails or fences placed around excavations near walkways or roads.
13	☐	☐	Excavation locations lighted/or otherwise made visible at night.
14	☐	☐	Ladders or ramps are provided to access and exit trenches more than 4 feet deep and within 25 ft of any entrance.
15	☐	☐	All excavated material, personnel, and heavy equipment are at least 24-inches from the edge of all trenches.
16	☐	☐	100% safe utility mark, excavation, and trenching observed
17	☐	☐	Coaching on safe utility mark, excavation and trenching observed.
18	☐	☐	Confined space entry (CSE) permit procedure in place and communicated to all.
19	☐	☐	CSE permit procedure used: ☐ Pre-entry review ☐ Safety watch/attendant ☐ Safety watch protected same as entrants ☐ Retrieval system ☐ Appropriate rescue available ☐ Continuous monitoring for %O_2 %LEL & TOX , , ,
20	☐	☐	CSE employee training documented.
21	☐	☐	100% safe CSE observed.
22	☐	☐	Coaching on CSE observed.
Comments/Additional Information:			

ELECTRICAL

Item No.	Yes	No	Element
1	☐	☐	Warning signs indicate the presence and location of high voltage equipment, 250 V or greater.
2	☐	☐	Qualified persons only permitted to work within 10 feet of any exposed live electrical conductors.
3	☐	☐	Electrical equipment and wiring properly guarded.
4	☐	☐	Electrical lines, extension cords, and cables guarded and properly maintained.
5	☐	☐	Extension cords kept dry out of puddles and rain.
6	☐	☐	Damaged equipment tagged out.
7	☐	☐	GFCIs used as appropriate.
8	☐	☐	Extension cords are rated for hard or extra hard outdoor use.
9	☐	☐	Underground electrical lines located and indicated per FLD 34.
10a	☐	☐	Arc flash assessments are performed as required.
10b	☐	☐	PPE for arc flash is provided.
10c	☐	☐	PPE for arc flash is appropriate.
11	☐	☐	100% safe electrical work observed.
12	☐	☐	Coaching on safe electrical work observed.
Comments/Additional Information:			

WALKING AND WORKING SURFACES

Item No.	Yes	No	Element
1	☐	☐	Access ways, stairs, ramps, and ladders free of ice, mud, snow, or debris
2	☐	☐	Mobile offices/labs have fixed stairs and handrails.
3	☐	☐	Work areas kept free of debris and equipment.
4	☐	☐	*Material in storage is protected from falling or collapse by effective stacking, blocking, cribbing, etc.*
5	☐	☐	*Walkways and aisles are kept clear.*
6	☐	☐	*Materials are not stored on scaffolds or runways in excess of normal placement or in excess of safe load limits.*
7	☐	☐	*Work areas and means of access are maintained safe and orderly.*
8	☐	☐	*Tools, materials, extension cords, hoses or debris do not cause tripping or other hazards.*
9	☐	☐	*Storage and construction-sites are kept free from the accumulation of combustible materials.*
10	☐	☐	Waste materials and rubbish are placed in containers or, if appropriate, in piles.
11	☐	☐	Waste materials are disposed of in accord with applicable local, state, or federal requirements.
12	☐	☐	100% safe walking and working surfaces observed.
13	☐	☐	Coaching on safe walking and working surfaces observed.
Comments/Additional Information:			

MATERIAL HANDLING

Item No.	Yes	No	Element
1	☐	☐	Mechanical lifting is available and used whenever possible.
2	☐	☐	Employees are trained in and use safe lifting techniques.
3	☐	☐	Repetitive motion tasks are evaluated and addressed in the HASP.
4	☐	☐	Repetitive injury prevention is discussed during indoctrination.
5	☐	☐	Repetitive injury prevention is a regular topic at daily meetings.
6	☐	☐	100% material handling observed.
7	☐	☐	Coaching on safe material handling observed.
Comments/Additional Information:			

FIRE PREVENTION/PROTECTION

Item No.	Yes	No	Element
1a	☐	☐	Hot Work Checklists completed (FLD 36).
1b	☐	☐	If Hot Work Permit(s) required: ☐ Permit(s) up to date. ☐ Closed out permit(s) on file.
2	☐	☐	Smoking restricted to designated area.
3	☐	☐	Fire lanes established, clearly designated, and maintained.
4	☐	☐	Flammable/combustible liquid dispensing transfer systems grounded and bonded.
5	☐	☐	Proper flammable materials storage used.
6a	☐	☐	Fire alarm established.
6b	☐	☐	Workers aware of established fire alarm

Item No.	Yes	No	Element
7	☐	☐	Fire extinguisher(s) appropriately located.
8	☐	☐	Fire extinguisher(s) appropriate for fire hazard potential.
9.	☐	☐	Location and use of fire extinguisher(s) known by all personnel.
10	☐	☐	Fire extinguisher(s) checked before each shift.
11	☐	☐	Fire extinguisher(s) inspected monthly.
12	☐	☐	Fire extinguisher(s) inspected yearly.
13	☐	☐	Combustible materials segregated from ignition sources.
14	☐	☐	Incompatibles segregated.
15	☐	☐	100% fire prevention/protection observed.
16	☐	☐	Coaching on fire prevention/protection observed.
Comments/Additional Information:			

MOTOR VEHICLES/HEAVY EQUIPMENT

Item No.	Yes	No	Element
1	☐	☐	Highway driving safety addressed in HASP.
2	☐	☐	Drivers assigned to vehicles based on experience and training.
3	☐	☐	Construction equipment inspected before each use. ☐ Inspections documente. ☐ Inspection documents on file.
4	☐	☐	Inspection issues identified are corrected.
5	☐	☐	Unsafe equipment tagged out and reported.
6	☐	☐	Certificates on-site for operators of equipment requiring licenses or certifications.
7	☐	☐	All safety appliances/guards in place.
8	☐	☐	Equipment shut down for fueling.
9	☐	☐	Construction equipment has back-up alarms or spotters are used if 360° visibility restricted.
10	☐	☐	Loads are secure before transport.
11	☐	☐	Roads and structures inspected for load capacity per vehicle weights.
12	☐	☐	A Traffic Control Plan is in effect.
13	☐	☐	100% safe vehicle and equipment operation observed.
14	☐	☐	Coaching on safe vehicle and equipment operation observed.
Comments/Additional Information:			

HAND AND POWER TOOLS

Item No.	Yes	No	Element
1	☐	☐	Guards and safety devices in place and used.
2	☐	☐	Tools inspected before each use.
3	☐	☐	Tools tagged out, if defective.
4	☐	☐	Eye protection areas identified and protection worn.
5	☐	☐	Non-sparking tools available.

Item No.	Yes	No	Element
6	☐	☐	Coaching on safe tool operation observed.
Comments/Additional Information:			

WELDING AND CUTTING

Item No.	Yes	No	Element
1	☐	☐	Only qualified welders permitted.
2	☐	☐	Hot work permitting system in use.
3	☐	☐	Fire watch provided.
4	☐	☐	Equipment inspected before use.
5	☐	☐	Welding equipment properly grounded.
6	☐	☐	Appropriate PPE worn: ☐ Proper helmets and shields (including proper tint for UV protection) ☐ Leathers or other protection from sparks/slag
7	☐	☐	Air sampling/monitoring is performed to assess toxic fume exposure.
8	☐	☐	Adjacent workers protected from welding flash.
9	☐	☐	Oxidizers and fuel cylinders separated by 20 feet or ½ hour fire wall in storage.
10	☐	☐	Fuel cylinders secured in upright position.
11	☐	☐	Fire extinguishers present at all welding and cutting operations.
12	☐	☐	100%safe welding and cutting operations observed.
13	☐	☐	Coaching on welding and cutting observed.
Comments/Additional Information:			

ENVIRONMENTAL PROTECTION AND SUSTAINABILITY PLAN (EPSP)

Item No.	Yes	No	Element
1	☐	☐	Environmental Protection and Sustainability Plan posted.
2	☐	☐	EPSP reviewed as part of site indoctrination.
3	☐	☐	EPSP Checklist used to review Environmental Compliance.
4	☐	☐	100% environmental compliance observed.
5	☐	☐	Coaching on environmental compliance observed.
Comments/Additional Information:			

MISCELLANEOUS

Item No.	Yes	No	Element
1	☐	☐	Overhead hazards are noted, communicated to all, and labeled as needed.
2	☐	☐	For large construction projects, EHS Inspection (Checklist is used.
3	☐	☐	Copies of contracts with client and sub-contractors are on-site, WESTON's role regarding site health and safety responsibilities are clear in these, and site manager(s) understands.

Item No.	Yes	No	Element
4	☐	☐	Sub-contractors have received approved copies of their safety plan or have signified their intent to conform to WESTON's safety plan.
5	☐	☐	Site managers understand their responsibilities for sub-contractors' conformance with all OSHA and other health and safety requirements
6	☐	☐	Site managers know what to do in the event of an OSHA/agency inspection
7	☐	☐	If warranted based on audit observations, a feedback session was provided to affected employees.
8	☐	☐	
9	☐	☐	
10	☐	☐	
Comments/Additional Information:			

COMMENTS/FEEDBACK PROVIDED:

ATTACHMENT B
SITE-SPECIFIC HAZARD COMMUNICATION PROGRAM

SITE-SPECIFIC HAZARD COMMUNICATION PROGRAM

To ensure an understanding of and compliance with the Hazard Communication Standard, WESTON will use this checklist/document (or similar document) in conjunction with the WESTON Written Hazard Communication Program as a means of meeting site- or location-specific requirements.

While responsibility for activities within this document reference the WESTON Safety Officer (SO), it is the responsibility of all personnel to effect compliance. Responsibilities under various conditions can be found within the WESTON Written Hazard Communication Program.

To ensure that information about the dangers of all hazardous chemicals used by WESTON are known by all affected employees, the following Hazard Communication Program has been established. All affected personnel will participate in the Hazard Communication Program. This written program, as well as WESTON's Corporate Hazard Communication Program, will be available for review by any employee, employee representative, representative of OSHA, NIOSH, or any affected employer/employee on a multi-employer site.

☐ Site or other location name/address: _____
☐ Site/Project/Location Manager: _____
☐ Site/Location Safety Officer: _____
☐ List of chemicals compiled, format: ☐ HASP ☐ Other: _____
☐ Location of MSDS files: _____
☐ Training conducted by: Name: _____ Date: _____
☐ Indicate format of training documentation: ☐ Field Log ☐ Other: _____
☐ Client briefing conducted regarding hazard communication: _____
☐ If multi-employer site (client, subcontractor, agency, etc.), indicate name of affected companies:

_____

☐ Other employer(s) notified of chemicals, labeling, and MSDS information: _____
☐ Has WESTON been notified of other employer's or client's hazard communication program(s), as necessary? ☐ Yes ☐ No

List of Hazardous Chemicals

A list of known hazardous chemicals used by WESTON personnel must be prepared and attached to this document or placed in a centrally identified location with the MSDSs. Further information on each chemical may be obtained by reviewing the appropriate MSDS. The list will be arranged to enable cross-reference with the MSDS file and the label on the container. The SO or Field Team Leader is responsible for ensuring the chemical listing remains up-to-date.

Container Labeling

The WESTON SO will verify that all containers received from the chemical manufacturer, importer, or distributor for use on-site are clearly labeled.

The SO is responsible for ensuring that labels are placed where required and for comparing MSDSs and other information with label information to ensure correctness.

Material Safety Data Sheets (MSDSs)

The SO is responsible for establishing and monitoring WESTON's MSDS program for the location. The SO will ensure that procedures are developed to obtain the necessary MSDSs and will review incoming MSDSs for new or significant health and safety information. He/she will see that any new information is passed on to the affected employees. If an MSDS is not received at the time of initial shipment, the SO will call the manufacturer and have an MSDS delivered for that product in accordance with the requirements of WESTON's Written Hazard Communication Program.

A log for, and copies of, MSDSs for all hazardous chemicals in use will be kept in the MSDS folder at a location known to all site workers. MSDSs will be readily available to all employees during each work shift. If an MSDS is not available, immediately contact the WESTON SO or the designated alternate. When a revised MSDS is received, the SO will immediately replace the old MSDS.

Employee Training and Information

The SO is responsible for the WESTON site-specific personnel training program. The SO will ensure that all program elements specified below are supplied to all affected employees.

At the time of initial assignment for employees to the work site, or whenever a new hazard is introduced into the work area, employees will attend a health and safety meeting or briefing that includes the information indicated below:

- Hazardous chemicals present at the work site.
- Physical and health risks of the hazardous chemicals.
- The signs and symptoms of overexposure.
- Procedures to follow if employees are overexposed to hazardous chemicals.
- Location of the MSDS file and Written Hazard Communication Program.
- How to determine the presence or release of hazardous chemicals in the employee's work area.
- How to read labels and review MSDSs to obtain hazard information.
- Steps WESTON has taken to reduce or prevent exposure to hazardous chemicals.
- How to reduce or prevent exposure to hazardous chemicals through the use of controls procedures, work practices, and personal protective equipment.
- Hazardous, non-routine tasks to be performed (if any).
- Chemicals within unlabeled piping (if any).

Hazardous Non-Routine Tasks

When employees are required to perform hazardous non-routine tasks, the affected employee(s) will be given information by the SO about the hazardous chemicals he or she may use during such activity. This information will include specific chemical hazards, protective and safety measures the employee can use, and steps WESTON is using to reduce the hazards. These steps include, but are not limited to, ventilation, respirators, presence of another employee, and emergency procedures.

Chemicals in Unlabeled Pipes

Work activities may be performed by employees in areas where chemicals are transferred through unlabeled pipes. Prior to starting work in these areas, the employee will contact the SO, at which time information as to the chemical(s) in the pipes, potential hazards of the chemicals or the process involved, and the safety precautions that should be taken will be determined and presented.

Multi-Employer Work Sites

It is the responsibility of the SO to provide other employers with information about hazardous chemicals imported by WESTON to which their employees may be exposed, along with suggested safety precautions. It is also the responsibility of the SO and the Field Team Leader to obtain information about hazardous chemicals used by other employers to which WESTON employees may be exposed. WESTON's chemical listing will be made available to other employers, as requested. MSDSs will be available for viewing, as necessary.

The location, format, and/or procedures for accessing MSDS information must be relayed to affected employees.

ATTACHMENT C
DETAILED HAZARD CHECKLIST

HAZARD CHECKLIST Location:	Address:	Task Team (name or reference via daily sign-in sheet)
Site Manager/EHS Officer:	Date:	

HAZARDS IDENTIFIED (check those applicable)

	Chemical		Biological		Physical		Aerial lifts		Remote Areas
☐	Flammable/Combustible	☐	Insects	☐	Noise	☐	Man. Material Handling	☐	Materials handling
☐	Corrosive	☐	Animals	☐	Heat	☐	Demolition	☐	High Pressure Washers
☐	Oxidizer	☐	Plants	☐	Cold	☐	Excavation	☐	Hand and Power Tools
☐	Reactive	☐	Mold/Fungus	☐	Inclement Weather	☐	Pile Driving	☐	Low Illumination
☐	Toxic	☐	Viral/Bacterial	☐	Hot Work	☐	Welding/Cutting/Burn	☐	Drilling and Boring
☐	Inhalation	☐	Density Gauges	☐	Confined Spaces	☐	Hot Surfaces	☐	Striking Against/Struck-by
☐	Eyes/Skin	☐	Radiological	☐	Stored Hazardous Energy	☐	Hot Materials	☐	Caught-in/Caught Between
☐	Pesticides	☐	Ultra-Violet	☐	Elevation	☐	Rough Terrain	☐	Pushing/Pulling
☐	Carcinogen	☐	Sunlight	☐	Utilities	☐	Compressed Gases	☐	Falls at Same Level
☐	Asbestos	☐	Infrared	☐	Machinery	☐	Hazardous Mat. Storage	☐	Falls from Elevation
☐	Lead	☐	Lasers	☐	Mobile Equipment	☐	Diving	☐	Repetitive Motion
☐	UXO/OE/ CWM	☐	XRF	☐	Cranes	☐	Operation of Boats	☐	High (>110v) Electricity
☐	Process Safety	☐	Isotopes	☐	Manual Material Handling	☐	Working Over Water	☐	Slippery Surface Ice/Snow
☐	Applying Paint/Coatings	☐		☐	Ladders	☐	Traffic	☐	
☐		☐		☐	Scaffolding	☐	Site Security	☐	

REQUIRED PROTECTION (check those applicable)

	Engineering Controls		Administrative Control		PPE				Contingency
☐	Guard Rails	☐	Qualified for Task	☐	Air Supplying Respirator	☐	Tyvek Coveralls	☐	Emergency Signal Known
☐	Machine Guards	☐	Trained/Certified	☐	Air Purifying Respirator	☐	Coated Coveralls	☐	Eye Wash/Shower Location
☐	Sound Barriers	☐	Hot Work Permit	☐	SCBA	☐	Welding Leathers	☐	First Aid Kit Location
☐	Enclosure	☐	CSE Permit	☐	Hard Hat	☐	CWM	☐	Fire Extinguisher Location
☐	Elevation	☐	Lockout/Tag Out	☐	Ear Plugs	☐	Safety Shoes/Boots	☐	Spill Kit Location
☐	Isolation	☐	Work Permit	☐	Ear Muffs	☐	Rubber Boots	☐	Severe Weather Shelter
☐	GFCI	☐	Dig Safe Permit	☐	Safety Glasses	☐	Gloves	☐	Evacuation Routes
☐	Assured Ground Program	☐	Contingency Plan	☐	Goggles	☐	Cooling Suits		
☐	Apply Anti-slip/Skid Mat	☐	Critical Lift Plans	☐	Chemical Goggles	☐	Ice Vests		
		☐	Equip. Inspection Sheets	☐	Face Shield	☐	Radiant Heat Suits		
				☐	Thermal Shield	☐	Fall Arrest		
				☐	Welding Mask	☐	PFD		
				☐	Cutting Glasses	☐	Electrical Insulation		

Any Modification to Tasks (list)	Other tasks or activities that may affect my activity	Reasons for any changes indicated above

Environmental Compliance Considerations:

☐	Generation of Hazardous Waste*	☐	Waste Identification & Manifesting - Marking, Placarding, Labeling
☐	Generation of Investigation Derived Waste*	☐	Training & Licensing for Use of Radioactive Materials/Sources
☐	Treatment, Storage, or Disposal of Hazardous Waste*	☐	Containers: dated, labeled, closed, full, stored less than 90 days
☐	Contingency to prevent or contain hazardous materials or oil spills or discharges to drains, body of water, soil*	☐	Risk of explosion or catastrophic release due to chemical storage or processing involving reactivity, flammables, solvents or explosives
☐	Disturbing of Asbestos Containing Materials (ACM)*	☐	Training & Licensing for Asbestos Remediation Activities
☐	Application of Pesticides or Herbicides*	☐	
☐	Work on Above or Under-ground Storage Tanks*	☐	
☐	Transportation, Storage or Disposal of Radioactive Material*	☐	
☐	Activities producing or generating Air Emissions (or fugitive "fence-line" emissions) requiring either monitoring and/or permit*	☐	
☐	Excavations, Drilling, Probing or other activities that could impact underground utilities, pipelines, sewer or treatment systems.	☐	
☐	Shipment of Hazardous Waste Off-Site* Shipment of Samples in accordance with DOT/IATA	☐	

* Indicates need for an environmental compliance plan.

ATTACHMENT D
DECONTAMINATION PLAN

GENERAL DECONTAMINATION PLAN

Personnel Decontamination

Consistent with the levels of protection required, step-by-step procedures for personnel decontamination for each level of protection are attached.

Levels of Protection Required for Decontamination Personnel

The levels of protection required for personnel assisting with decontamination will be:

☐ Level A ☐ Level B ☐ Level C ☐ Level D

Modifications include:

Disposition of Decontamination Wastes

Provide a description of waste disposition including identification of storage area, hauler, and final disposal site, if applicable

Equipment Decontamination

A procedure for decontamination steps required for non-sampling equipment and heavy machinery follows:

Sampling Equipment Decontamination

Sampling equipment will be decontaminated in accordance with the following procedure:

LEVEL D DECONTAMINATION PLAN

Check indicated functions or add steps, as necessary:

Function	Description of Process, Solution, and Container
☐Segregated equipment drop	
☐Boot cover and glove wash	
☐Boot cover and glove rinse	
☐Tape removal - outer glove and boot	
☐Boot cover removal	
☐Outer glove removal	
HOTLINE	
☐Suit/safety boot wash	
☐Suit/boot/glove rinse	
☐Safety boot removal	
☐Suit removal	
☐Inner glove wash	
☐Inner glove rinse	
☐Inner glove removal	
☐Inner clothing removal	
CONTAMINATION REDUCTION ZONE (CRZ)/SAFE ZONE BOUNDARY	
☐Field wash	
☐Redress	

Disposal Plan, End of Day:

Disposal Plan, End of Week:

Disposal Plan, End of Project:

LEVEL C DECONTAMINATION PLAN	
Check indicated functions or add steps, as necessary:	
Function	**Description of Process, Solution, and Container**
☐Segregated equipment drop	
☐Boot cover and glove wash	
☐Boot cover and glove rinse	
☐Tape removal - outer glove and boot	
☐Boot cover removal	
☐Outer glove removal	
HOTLINE	
☐Suit/safety boot wash	
☐Suit/boot/glove rinse	
☐Safety boot removal	
☐Suit removal	
☐Inner glove wash	
☐Inner glove rinse	
☐Facepiece removal	
☐Inner glove removal	
☐Inner clothing removal	
CONTAMINATION REDUCTION ZONE (CRZ)/SAFE ZONE BOUNDARY	
☐Field wash	
☐Redress	
Disposal Plan, End of Day:	
Disposal Plan, End of Week:	
Disposal Plan, End of Project:	

LEVEL B DECONTAMINATION PLAN	
Check indicated functions or add steps, as necessary:	
Function	**Description of Process, Solution, and Container**
☐Segregated equipment drop	
☐Boot cover and glove wash	
☐Boot cover and glove rinse	
☐Tape removal - outer glove and boot	
☐Boot cover removal	
☐Outer glove removal	
HOTLINE	
☐Suit/safety boot wash	
☐Suit/SCBA/boot/glove rinse	
☐Safety boot removal	
☐Remove SCBA backpack without disconnecting	
☐Splash suit removal	
☐Inner glove wash	
☐Inner glove rinse	
☐SCBA disconnect and facepiece removal	
☐Inner glove removal	
☐Inner clothing removal	
CONTAMINATION REDUCTION ZONE (CRZ)/SAFE ZONE BOUNDARY	
☐Field wash	
☐Redress	
Disposal Plan, End of Day:	
Disposal Plan, End of Week:	

LEVEL B DECONTAMINATION PLAN
Disposal Plan, End of Project:

LEVEL A DECONTAMINATION PLAN	
Check indicated functions or add steps, as necessary:	
Function	**Description of Process, Solution, and Container**
☐Segregated equipment drop	
☐Boot cover and glove wash	
☐Boot cover and glove rinse	
☐Tape removal - outer glove and boot	
☐Boot cover removal	
☐Outer glove removal	
HOTLINE	
☐Suit/safety boot wash	
☐Suit/SCBA/boot/glove rinse	
☐Safety boot removal	
☐Remove SCBA backpack without disconnecting	
☐Splash suit removal	
☐Inner glove wash	
☐Inner glove rinse	
☐SCBA disconnect and facepiece removal	
☐Inner glove removal	
☐Inner clothing removal	
CONTAMINATION REDUCTION ZONE (CRZ)/SAFE ZONE BOUNDARY	
☐Field wash	
☐Redress	
Disposal Plan, End of Day:	

LEVEL A DECONTAMINATION PLAN
Disposal Plan, End of Week:
Disposal Plan, End of Project:

ATTACHMENT E
AIR MONITORING LOGS AND CALIBRATION RECORDS

AIR MONITORING SUMMARY LOG

Date: _________/_________/_________ Collected by: ______________________________

Please specify where air monitoring data will be documented: ☐ Field Notebook ☐ Field Data Sheets

☐ Air Monitoring Log ☐ Trip Report ☐ Other ______________________________

Station Location	Multi-RAE Plus	TVA 1000 (FID/PID)	Radiation Meter	DataRAM or PDR	Lumex MVA	Other	Other
Background Readings	____%LEL ____%O_2 ____ppm CO ____ppm H_2S ____ppm VOC	____ppm	____µR/hr ____mR/hr ____CPM	____µg/m^3 or ____mg/m^3	____ng/m^3		
	____%LEL ____%O_2 ____ppm CO ____ppm H_2S ____ppm VOC	____ppm	____µR/hr ____mR/hr ____CPM	____µg/m^3 or ____mg/m^3	____ng/m^3		
	____%LEL ____%O_2 ____ppm CO ____ppm H_2S ____ppm VOC	____ppm	____µR/hr ____mR/hr ____CPM	____µg/m^3 or ____mg/m^3	____ng/m^3		
	____%LEL ____%O_2 ____ppm CO ____ppm H_2S ____ppm VOC	____ppm	____µR/hr ____mR/hr ____CPM	____µg/m^3 or ____mg/m^3	____ng/m^3		
	____%LEL ____%O_2 ____ppm CO ____ppm H_2S ____ppm VOC	____ppm	____µR/hr ____mR/hr ____CPM	____µg/m^3 or ____mg/m^3	____ng/m^3		
	____%LEL ____%O_2 ____ppm CO ____ppm H_2S	____ppm	____µR/hr ____mR/hr ____CPM	____µg/m^3 or ____mg/m^3	____ng/m^3		

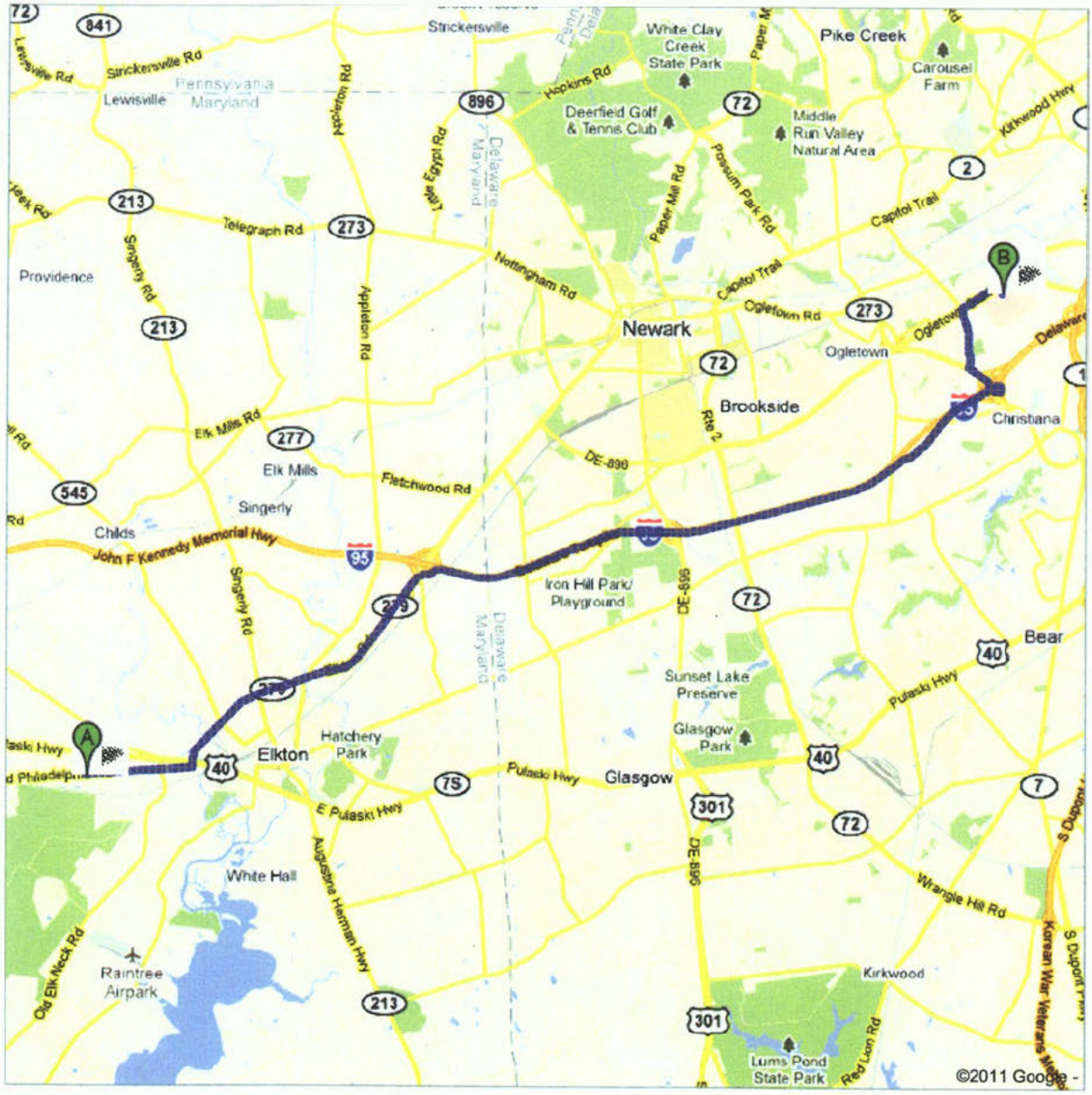
	_____ppm VOC						

AIR MONITORING INSTRUMENT CALIBRATION RECORD

Instrument, Mfg., Model, Equip. ID No.	Date	Time	Calib. Material	Calib. Method Mfg.'s	Other	Initial Setting and Reading	Final Setting and Reading	Calibrator's Initials

Google maps

Directions to 1. Christiana Care Health System
4755 Ogletown Stanton Road, Newark, DE 19713 -
(800) 693-2273
14.6 mi – about **25 mins**



A 1726 E Old Philadelphia Rd, Elkton, MD 21921

1.	Head **east** on **MD-7 E/E Old Philadelphia Rd** toward **Shaggy Oak Dr** About 2 mins	go 1.3 mi total 1.3 mi
2.	Continue onto **MD-279 E/Elkton Rd** Continue to follow MD-279 E About 8 mins	go 3.6 mi total 4.9 mi
3.	Merge onto **I-95 N** via the ramp to **New York** Partial toll road Entering Delaware About 9 mins	go 7.5 mi total 12.4 mi
4.	Take exit **3B** to merge onto **DE-273 W** toward **Newark** About 1 min	go 0.7 mi total 13.1 mi
5.	Turn right at **Harmony Rd S** About 2 mins	go 0.7 mi total 13.9 mi
6.	Turn right at **DE-4 E/Ogletown Stanton Rd** About 1 min	go 0.6 mi total 14.4 mi
7.	Turn right at **Hygeia Dr**	go 325 ft total 14.5 mi
8.	Turn right	go 128 ft total 14.5 mi
9.	Turn right	go 0.1 mi total 14.6 mi

B **1. Christiana Care Health System**
4755 Ogletown Stanton Road, Newark, DE 19713 - (800) 693-2273

APPENDIX E
EXPLOSIVES SITE PLAN

FINAL
EXPLOSIVES SITE PLAN

REMOVAL SITE EVALUATION FOR THE NEW JERSEY FIRWORKS SITE IN ELKTON, MARYLAND

TDD NO.: WS-01-10-08-004

Prepared For:

U.S. ENVIRONMENTAL PROTECTION AGENCY REGION 3
1650 ARCH STREET
PHILADELPHIA, PENNSLYVANIA 19103

Submitted By:

WESTON SOLUTIONS, INC.
1400 WESTON WAY
WEST CHESTER, PA 19380

WESTON PROJECT NO.: 20403.012.001.0019.00

FEBRUARY 2011

TABLE OF CONTENTS

LIST OF APPENDICES

LIST OF TABLES

LIST OF ACRONYMS AND ABBREVIATIONS

BIP	blow-in-place
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
EPA	Environmental Protection Agency
ESP	Explosives Site Plan
ESQD	Explosive Safety Quantity Distance
ft	feet
GPS	Global Positioning System
HE	high explosive
HFD	hazardous fragment distance
MEC	munitions and explosives of concern
MGFD	munitions with the greatest fragmentation distance
MPPEH	materials potentially presenting an explosive hazard
MSD	minimum separation distance
NJF	New Jersey Fireworks
RTK	Real Time Kinematic
RSE	Removal Site Evaluation
START	Superfund Technical Assessment and Respond Team
UXO	unexploded ordnance
WWII	World War II

1. Site Location

a. New Jersey Fireworks Site in Elkton, Cecil County, Maryland.

2. Anticipated Dates of Field Effort

a. Start: March, 2011
b. Finish: April, 2011

3. Purpose

a. This Explosives Site Plan (ESP) is required for the Removal Site Evaluation (RSE) at the New Jersey Fireworks Site (NJF) due to the intentional and expected physical contact with munitions and explosives of concern (MEC) during field activities.
b. This work is being performed under the Environmental Protection Agency (EPA) Superfund Technical Assessment and Response Team (START) contract EP-S3-10-05 in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) and is part of the overall removal action process.

4. Site Background and Current Conditions

a. The NJF Site is located north of the Elk Neck State Forest and consists of approximately 61.4 acres. **Figure 1** in **Appendix A** shows the location of the NJF Site.
b. The NJF Site is located at 1726 E. Old Philadelphia Road in Cecil County, Elkton, Maryland and the land is privately owned. It is bordered by Route 7 to the north, railroad tracks to the south, a tributary and mobile-home park to the east and a septic cleaning company to the west.
c. The site has historically been used for pyrotechnics manufacturing, primarily for fireworks. During World War II (WWII), military munitions may have been produced on-site.
d. A "mag and dig" survey was conducted in 2007 over a two acre area. Based upon the discovery of MEC, an additional "mag and flag" survey was performed in 2007 to further investigate the extent of MEC present onsite. The targets generated from that survey were not investigated.
e. Current land use: There is a pallet manufacturing operation currently active in the southwest portion of the site.
f. Accessibility: The site is closed to the public. A fence surrounds the site and can only be accessed by a gate on north side of the site, along Route 7.
g. Munitions that have been recovered within the NFJ Site include:

i. Spotting charge associated with a M-38 practice bomb
ii. Tracer Rounds
iii. Grenade fuses and pins

5. Executing Agencies

a. U.S. Environmental Protection Agency, Region 3

6. Scope of Investigation

a. A surface and subsurface investigative action is required to fully characterize the site to determine the nature and extent of potential MEC.

b. The selected investigative technique for MEC is as follows:

i. Mark areas identified from previous investigations using Global Positioning System (GPS) Real Time Kinematic (RTK) survey equipment.
ii. Mag and dig using all metals detectors in marked areas.
iii. Targets will be investigated to a depth up to 2-ft using hand tools only.

7. Safety Criteria

a. The munitions with the greatest fragmentation distance (MGFD) at the site is presented in Table 7-1. During the course of this investigative action, if MEC with a greater fragmentation distance is encountered, the minimum separation distance (MSD) will be adjusted in accordance with DDESB Technical Paper 16, operations will continue, and an amendment to this ESP will be submitted.

b. Based on the findings from previous investigations at the site, the 100lb M38 Practice Bomb was selected as the MGFD. This model uses a M1A1 spotting charge (non-fragmenting, blast only) with a net explosive/ filler weight (NEW) of approximately 3 pounds.

c. Any occupied buildings or public roadways in the MSD during MEC operations will be evacuated and/or roadways blocked to prevent non-essential personnel from entering during the conduct of MEC operations. Guards will be posted as necessary to ensure work is halted if non-essential personnel enter the MSD.

d. See Table 7-1 for Minimum Separation Distances.

Table 7-1 Minimum Separation Distances

Minimum Separation Distances [1]						
Area	Munition With the Greatest Fragmentation Distance (MGFD)	Feet (ft)				
		For Unintentional Detonations		For Intentional Detonations		
		Team Separation Distance (K40) [1]	Hazardous Fragment Distance (HFD)	Without Engineering Controls (MFR)	Using Engineering Controls	Consolidated Shots NEW (lbs)
New Jersey Fireworks Site	Bomb, Practice, 100-lb, M38 with M1A1 spotting charge [2]	45 ft [3]	NA	NA	370-ft [4]	NA

Notes:
1. MSD for non-essential personnel for MEC items that do not have a fragment producing design.
2. M1A1 has a net explosive weight of approximately 3-lbs. The TNT equivalent weight (pressure) was calculated to be 0.8-lbs using a TNT equivalency of 0.4. Datasheets are provided in **Appendix B**.
3. K40 distance was calculated based on the following equation: D = 40*(1.2*0.8)^(1/3). Includes a 20% safety factor.
4. K328 distance was calculated based on the following equation: D = 328*(1.2*0.8)^(1/3). Includes a 20% safety factor.

8. Methods of Disposal

a. Demolition activities will be conducted by the Weston Solutions, Inc. (WESTON) Unexploded Ordnance (UXO) Team under the supervision of a Demolition Supervisor who hold a current MD Blaster's License.

b. WESTON will not maintain or store explosives onsite. MPPEH and MEC that require demolition will be destroyed on a daily basis.

c. WESTON will utilize local vendors for explosives delivery on a daily basis, as needed. In the event that item(s) cannot be destroyed the same day as discovery, they will be guarded until demolition can be conducted the following day.

d. All MPPEH and MEC will that can be moved will be consolidated. MPPEH and MAC that cannot be move will be blow-in-place (BIP).

e. The ESQD arc for intentional detonations is 370 feet and is depicted in **Figure 2**.

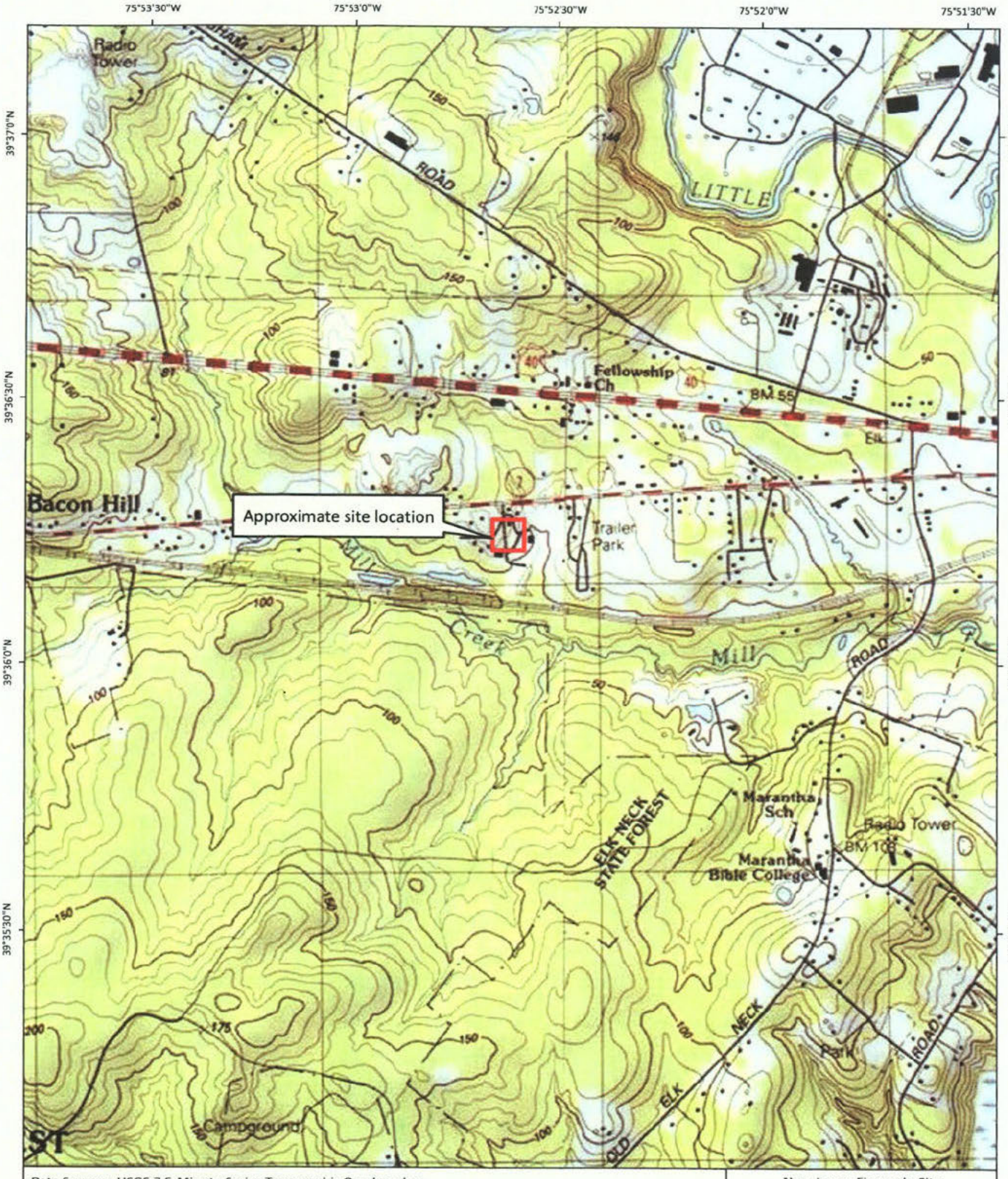
f. All inspected and certified material documented as safe will be handled and accounted for in accordance with Department of Defense Instruction 4140.62.

9. Maps

a. Maps are provided in Appendix A. **Figure 1** shows the regional location of the New Jersey Fireworks Site. **Figure 2** shows the minimum separation distances for unintentional and intentional detonations.

APPENDIX A

FIGURES



Data Sources: USGS 7.5-Minute Series Topographic Quadrangles:
Elkton, Maryland - Delaware, 1992; North East, Maryland, 1992

New Jersey Fireworks Site
Elkton, Cecil County, Maryland

Quadrangle Location =

Coordinate System:
WGS_1984_Web_Mercator_Auxiliary_Sphere
Projection: Mercator_Auxiliary_Sphere

GCS_WGS_1984
Datum: D_WGS_1984

N

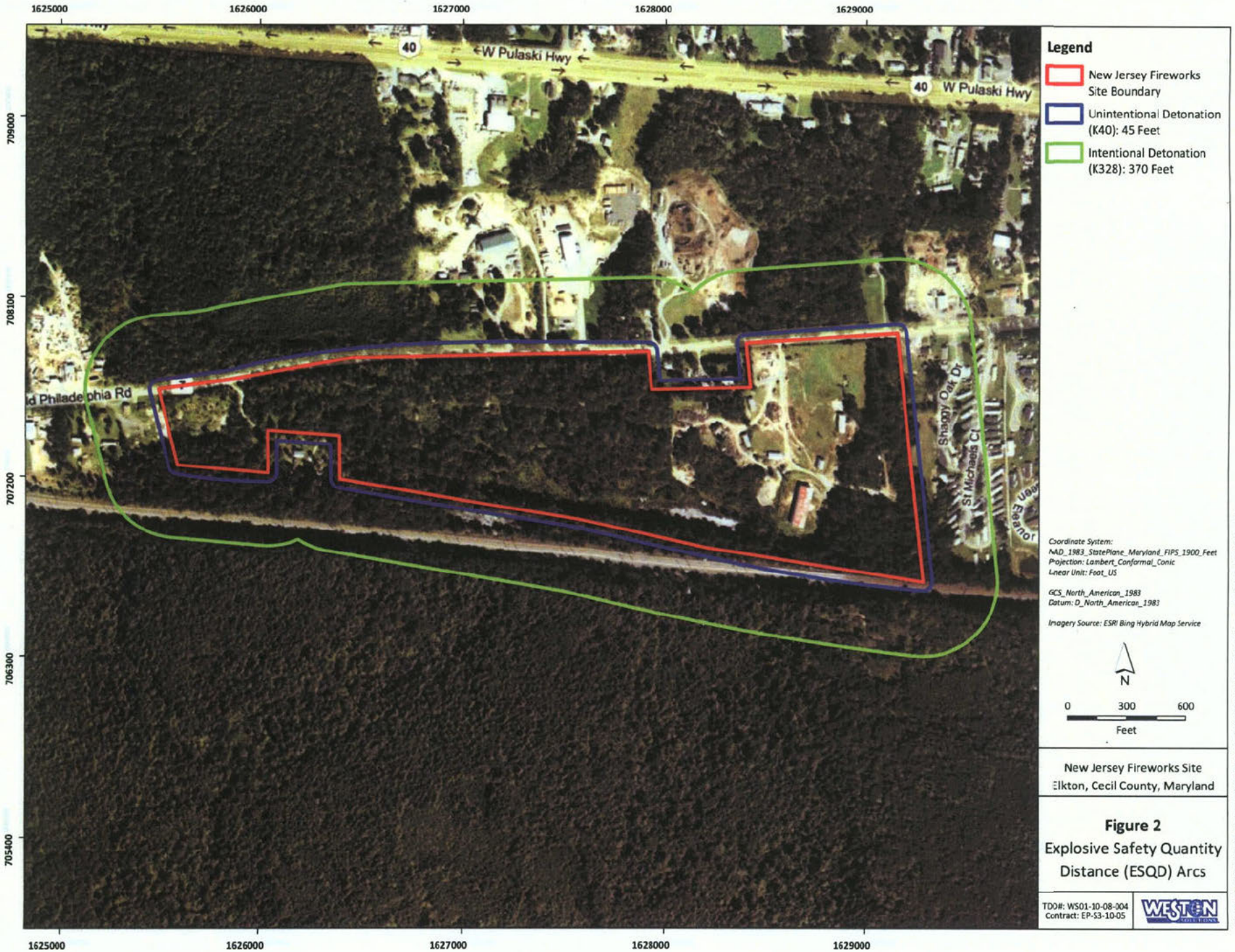
0 1,250 2,500
Feet

Figure 1
Site Location Map

TDD#: WS01-10-08-004
Contract: EP-S3-10-05

WESTON SOLUTIONS

File: \\Fsfed01\TIG\EPA_Region_III\NJ_Fireworks\MXD\Site_loc.mxd, 09-Feb-11 13:07, zieglera


1625000
1626000
1627000
1628000
1629000
709000
708100
707200
706300
705400
40
W Pulaski Hwy
d Philadelphia Rd
Shaggy Oak Dr
St Michaels Ct
Legend
New Jersey Fireworks Site Boundary
Unintentional Detonation (K40): 45 Feet
Intentional Detonation (K328): 370 Feet
Coordinate System:
NAD_1983_StatePlane_Maryland_FIPS_1900_Feet
Projection: Lambert_Conformal_Conic
Linear Unit: Foot_US
GCS_North_American_1983
Datum: D_North_American_1983
Imagery Source: ESRI Bing Hybrid Map Service
N
0
300
600
Feet
New Jersey Fireworks Site
Elkton, Cecil County, Maryland
Figure 2
Explosive Safety Quantity Distance (ESQD) Arcs
TDO#: WS01-10-08-004
Contract: EP-S3-10-05
WESTON SOLUTIONS
File: \\Fsfed01\TG\EPA_Region_III\WJ_Fireworks\MXD\Muni_Resp_Site_Map.mxd, 10-Feb-11 12:44, zieglera

APPENDIX B

FRAGMENTATION CALCULATION DATA SHEETS

Fragmentation Data Review Form

Database Revision Date 9/30/10

Category:	Non-Fragmenting Rounds	DODIC:	
Munition:	100LB M38A2 Practice Bomb		
Case Material:	Steel, Mild	Date Record Created:	9/21/2004
		Record Created By:	MC
Fragmentation Method:	Non-Fragmenting	Last Date Record Updated:	
Secondary Database Category:		Individual Last Updated Record:	
Munition Case Classification:	Non-Fragmenting	Date Record Retired:	

Munition Information and Fragmentation Characteristics

Explosive Type:	Black Powder
Explosive Weight (lb):	3
Diameter (in):	8.1300
Maximum Fragment Weight (Intentional) (lb):	
Design Fragment Weight (95%) (Unintentional) (lb):	
Critical Fragment Velocity (fps):	

Overpressure Distances

TNT Equivalent (Pressure):	0.40
TNT Equivalent Weight - Pressure (lbs):	1.200
Unbarricaded Intraline Distance (3.5 psi), K18 Distance:	19
Public Traffic Route Distance (2.3 psi); K24 Distance:	26
Inhabited Building Distance (1.2 psi), K40 Distance:	43
Intentional MSD (0.0655 psi), K328 Distance:	349

Required Sandbag Thickness

TNT Equivalent (Impulse):	0.4
TNT Equivalent Weight - Impulse (lbs):	1.200
Kinetic Energy 10^6 (lb-ft²/s²):	
Required Wall & Roof Sandbag Thickness (in)	
Expected Maximum Sandbag Throw Distance (ft):	
Minimum Separation Distance (ft):	

Distribution authorized to the Department of Defense and U.S. DoD contractors only for Administrative-Operational Use (17 October 2002). Other requests shall be referred to the Chairman, Department of Defense Explosives Safety Board, Room 856C, Hoffman Building I, 2461 Eisenhower Avenue, Alexandria, VA 22331-0600.

Theoretical Calculated Fragment Distances

HFD [Hazardous Fragment Distance: distance to no more than 1 hazardous fragment per 600 square feet] (ft):	
MFD-H [Maximum Fragment Distance, Horizontal] (ft):	
MFD-V [Maximum Fragment Distance, Vertical] (ft):	

Minimum Thickness to Prevent Perforation

	Intentional	Unintentional
4000 psi Concrete (Prevent Spall):		
Mild Steel:		
Hard Steel:		
Aluminum:		
LEXAN:		
Plexi-glass:		
Bullet Resist Glass:		

Water Containment System and Minimum Separation Distance:

TNT Equivalent (Impulse):	0.4
TNT Equivalent Weight - Impulse (lbs):	1.200
Kinetic Energy 106 (lb-ft²/s²):	
Water Containment System:	
Minimum Separation Distance (ft):	

Item Notes